```
RRRRRRRRRRR      MMM          MMM     SSSSSSSSSSS
RRRRRRRRRRRR     MMM          MMM     SSSSSSSSSSSS
RRRRRRRRRRRR     MMM          MMM     SSSSSSSSSSSS
RRR         RRR  MMMMMM    MMMMMM  SSS
RRR         RRR  MMMMMM    MMMMMM  SSS
RRR         RRR  MMMMMM    MMMMMM  SSS
RRR         RRR  MMM  MMM  MMM  MMM  SSS
RRR         RRR  MMM  MMM  MMM  MMM  SSS
RRR         RRR  MMM  MMM  MMM  MMM  SSS
RRRRRRRRRRRR     MMM          MMM     SSSSSSSSS
RRRRRRRRRRRR     MMM          MMM     SSSSSSSSS
RRRRRRRRRRRR     MMM          MMM     SSSSSSSSS
RRR   RRR        MMM          MMM             SSS
RRR   RRR        MMM          MMM             SSS
RRR   RRR        MMM          MMM             SSS
RRR      RRR     MMM          MMM             SSS
RRR      RRR     MMM          MMM             SSS
RRR      RRR     MMM          MMM             SSS
RRR         RRR  MMM          MMM  SSSSSSSSSSS
RRR         RRR  MMM          MMM  SSSSSSSSSSS
RRR         RRR  MMM          MMM  SSSSSSSSSSS
```

```
RRRRRRRR    MM      MM    SSSSSSSS    IIIIII    NN      NN  TTTTTTTTTT  DDDDDDDD    EEEEEEEEEE  FFFFFFFFFF
RRRRRRRR    MM      MM    SSSSSSSS    IIIIII    NN      NN  TTTTTTTTTT  DDDDDDDD    EEEEEEEEEE  FFFFFFFFFF
RR      RR  MMMM  MMMM  SS              II      NN      NN      TT      DD      DD  EE          FF
RR      RR  MMMM  MMMM  SS              II      NN      NN      TT      DD      DD  EE          FF
RR      RR  MM  MM  MM  SS              II      NNNN    NN      TT      DD      DD  EE          FF
RR      RR  MM  MM  MM  SS              II      NNNN    NN      TT      DD      DD  EE          FF
RRRRRRRR    MM      MM    SSSSSS        II      NN  NN  NN      TT      DD      DD  EEEEEEEE    FFFFFFF
RRRRRRRR    MM      MM    SSSSSS        II      NN  NN  NN      TT      DD      DD  EEEEEEEE    FFFFFFF
RR  RR      MM      MM          SS      II      NN    NNNN      TT      DD      DD  EE          FF
RR  RR      MM      MM          SS      II      NN    NNNN      TT      DD      DD  EE          FF
RR    RR    MM      MM          SS      II      NN      NN      TT      DD      DD  EE          FF          ....
RR    RR    MM      MM          SS      II      NN      NN      TT      DD      DD  EE          FF          ....
RR      RR  MM      MM  SSSSSSSS    IIIIII    NN      NN      TT      DDDDDDDD    EEEEEEEEEE  FF          ....
RR      RR  MM      MM  SSSSSSSS    IIIIII    NN      NN      TT      DDDDDDDD    EEEEEEEEEE  FF          ....

LL              SSSSSSSS  TTTTTTTTTT
LL              SSSSSSSS  TTTTTTTTTT
LL          SS                TT
LL          SS                TT
LL          SS                TT
LL          SS                TT
LL            SSSSSS          TT
LL            SSSSSS          TT
LL                  SS        TT
LL                  SS        TT
LL                  SS        TT
LL                  SS        TT
LLLLLLLLLL  SSSSSSSS          TT
LLLLLLLLLL  SSSSSSSS          TT
```

```
;  0001  0     !++
;  0002  0     !
;  0003  0     ! UTLDEF.B32 - UTILITY DEFINITION MACROS FOR BLISS PROCESSING
;  0004  0     !              OF STARLET DEFINITION MACROS.
;  0005  0     !       Version 'V04-000'
;  0006  0     !
;  0007  0     !--
;  0008  0     !*****************************************************************************
;  0009  0     !*                                                                           *
;  0010  0     !*  COPYRIGHT (c) 1978, 1980, 1982, 1984 BY                                  *
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;  0027  0     !*                                                                           *
;  0028  0     !*                                                                           *
;  0029  0     !*****************************************************************************
;  0030  0     !
;  0031  0     !++
;  0032  0     !
;  0033  0     ! MODIFIED BY:
;  0034  0     !
;  0035  0     !       V02-001 REFORMAT        Maria del C. Nasr       01-Aug-1980
;  0036  0     !
;  0037  0     !--
;  0038  0     !
;  0039  0     !
;  0040  0     ! macros to extract offsets, field widths, etc., from field extraction macros
;  0041  0     !
;  0042  0     !
;  0043  0     MACRO   $BYTEOFFSET (OFFSET, POSITION, WIDTH, SIGN) = OFFSET%;
;  0044  0     !
;  0045  0     MACRO   $BITPOSITION (OFFSET, POSITION, WIDTH, SIGN) = POSITION%;
;  0046  0     !
;  0047  0     MACRO   $FIELDWIDTH (OFFSET, POSITION, WIDTH, SIGN) = WIDTH%;
;  0048  0     !
;  0049  0     MACRO   $EXTENSION (OFFSET, POSITION, WIDTH, SIGN) = SIGN%;
;  0050  0     !
;M 0051  0     MACRO   $FIELDMASK (OFFSET, POSITION, WIDTH, SIGN) =
;  0052  0             (1^(POSITION+WIDTH) - 1^POSITION)%;
;  0053  0     !
;  0054  0     !
;  0055  0     ! macro to generate equlst constructs
;  0056  0     !
;  0057  0     MACRO
```

```
;  M 0058  0               $EQULST(P,G,I,S)[A]=
;  M 0059  0                   %NAME(P,GET1ST_ A) =
;  M 0060  0                       %IF NUL2ND_ A
;  M 0061  0                       %THEN (I) * %COUNT*(S)  ! assumes i, s always generated by conversion program
;  M 0062  0                       %ELSE GET2ND_ A
;    0063  0                       %FI %,
;    0064  0
;  M 0065  0               GET1ST_(A,B)=
;    0066  0                   A %,
;  M 0067  0               GET2ND_(A,B)=
;    0068  0                   B %,        ! known non-null
;  M 0069  0               NUL2ND_(A,B)=
;    0070  0                   %NULL(B) %;
```

```
;    0071  0      !       $BEGIN RMSIDXMAC,V04-000
;    0072  0      !
;    0073  0      !       MACRO DEFINITIONS FOR RMS-32 INDEX FILE ORGANIZATION
;    0074  0      !
;    0075  0      !****************************************************************************
;    0076  0      !*                                                                          *
;    0077  0      !*  COPYRIGHT (c) 1978, 1980, 1982, 1984 BY                                 *
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;    0093  0      !*  SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.                 *
;    0094  0      !*                                                                          *
;    0095  0      !*                                                                          *
;    0096  0      !****************************************************************************
;    0097  0      !
;    0098  0      !++
;    0099  0      !
;    0100  0      ! FACILITY:     RMS32 INDEX SEQUENTIAL FILE ORGANIZATION
;    0101  0      !
;    0102  0      ! ABSTRACT:
;    0103  0      !
;    0104  0      !
;    0105  0      ! ENVIRONMENT:
;    0106  0      !
;    0107  0      !               VAX/VMS OPERATING SYSTEM
;    0108  0      !
;    0109  0      !--
;    0110  0      !
;    0111  0      ! AUTHOR:  D. H. Gillespie     CREATION DATE:  17-MAR-1978
;    0112  0      !          and W. Koenig
;    0113  0      !
;    0114  0      !
;    0115  0      ! MODIFIED BY:
;    0116  0      !
;    0117  0      !       V03-002 MCN0003         Maria del C. Nasr       15-Mar-1982
;    0118  0      !               Use new general linkage for RM$BUG3.  Take out definition
;    0119  0      !               for R_REC_SIZE, and R_VBN.
;    0120  0      !
;    0121  0      !       V03-001 MCN0002         Maria del C. Nasr       25-Mar-1982
;    0122  0      !               Add macro definition to calculate key buffer address.
;    0123  0      !
;    0124  0      !       V02-003 CDS0001         C Saether                9-Dec-1981
;    0125  0      !               Comment out references to CSH$M_READAHEAD flag in the
;    0126  0      !               $CSHFLAGS macro.
;    0127  0      !
```

```
;  0128  0     !       V02-002 MCN0001         Maria del C. Nasr       22-Apr-1981
;  0129  0     !               Add macro definition for determining record identifier size
;  0130  0     !
;  0131  0     !**
;  0132  0
;  0133  0
```

```
;  0134  0     !
;  0135  0     ! Define macro for psect attributes
;  0136  0     !
;  0137  0     MACRO   PSECT_ATTR = EXECUTE,PIC,GLOBAL %;
;  0138  0     !
;  0139  0     ! Define macro to extract size
;  0140  0     !
;  0141  0     MACRO   $BYTESIZE(OFFSET,POSITION,WIDTH,SIGN) = WIDTH / 8 %;
;  0142  0
;  0143  0     !
;  0144  0     ! Structure declarations used for system defined structrues to save typing
;  0145  0     !
;  0146  0     STRUCTURE
;  0147  0             BBLOCK [O, P, S, E; N] =
;  0148  0                     [N]
;  0149  0                     (BBLOCK+O)<P,S,E>,
;  0150  0
;  0151  0             BBLOCKVECTOR [I, O, P, S, E; N, BS] =
;  0152  0                     [N*BS]
;  0153  0                     (BBLOCKVECTOR+(O+I*BS))<P,S,E>;
;  0154  0
;  0155  0     !
;  0156  0     ! ***** The following two macros violate the BLISS language definition
;  0157  0     ! ***** in that they make use of the value of SP while building the argument
;  0158  0     ! ***** list.  It is the opinion of the BLISS maintainers that this usage is safe
;  0159  0     ! ***** from planned future optimizations.
;  0160  0     !
;  0161  0     ! Macro to call the change mode to kernel system service.
;  0162  0     !
;  0163  0     ! Macro call format is "KERNEL_CALL( ROUTINE, ARG1, ARG2, ...).
;  0164  0     !
;  0165  0     MACRO
;M 0166  0             KERNEL_CALL (R) =
;M 0167  0                     BEGIN
;M 0168  0                     EXTERNAL ROUTINE SYS$CMKRNL     : ADDRESSING_MODE (ABSOLUTE):
;M 0169  0                     BUILTIN SP;
;M 0170  0                     SYS$CMKRNL(4, .SP, %LENGTH-1
;M 0171  0                             %IF %LENGTH GTR 1 %THEN, %REMAINING %FI)
;  0172  0                     END%;
;  0173  0
;  0174  0     !
;  0175  0     ! macro to generate a string descriptor
;  0176  0     !
;  0177  0     MACRO
;M 0178  0             DESCRIPTOR (STRING) =
;  0179  0                     UPLIT (%CHARCOUNT (STRING), UPLIT BYTE (STRING))%;
;  0180  0
;  0181  0     !
;  0182  0     ! macro to return the number of actual parameters supplied to a routine call
;  0183  0     !
;  0184  0     MACRO
;M 0185  0             ACTUALCOUNT =
;M 0186  0                     BEGIN
;M 0187  0                     BUILTIN AP;
;M 0188  0                     .(.AP)<0,8>
;M 0189  0                     END
;  0190  0                     %;
```

```
;    0191  0      !
;    0192  0      ! macro to generate call to bug check routine
;    0193  0      !
;  M 0194  0      MACRO BUG_CHECK =
;  M 0195  0              ( LINKAGE L_JSB;
;  M 0196  0                EXTERNAL ROUTINE
;  M 0197  0                    RM$BUG3 :  RL$JSB;
;    0198  0                RM$BUG3 ()  ) %;
;    0199  0
;    0200  0      !
;    0201  0      ! Macro used to determine record identifier size (byte or word) depending on
;    0202  0      ! prologue version of the file.
;    0203  0      !
;  M 0204  0      MACRO IRC$_ID(RECADR) =
;  M 0205  0              (IF .IFAB[IFB$B_PLG_VER] LSSU PLG$C_VER_3
;  M 0206  0              THEN
;  M 0207  0                  .RECADR[IRC$B_ID]
;  M 0208  0              ELSE
;    0209  0                  .RECADR[IRC$W_ID]) % ;
;    0210  0
;    0211  0
;    0212  0      ! Macro used to determine address of key buffer wanted.  Parameter is
;    0213  0      ! the keybuffer number.
;    0214  0      !
;    0215  0
;  M 0216  0      MACRO KEYBUF_ADDR(KBUFNO) =
;    0217  0              .IRAB[IRB$L_KEYBUF] + .IFAB[IFB$W_KBUFSZ] * ((KBUFNO) - 1) % ;
;    0218  0
;    0219  0
```

```
;    0220  0
;    0221  0     !KEEP THESE DEFINITIONS IN ALPHABETICAL ORDER, PLEASE!
;    0222  0
;    0223  0     !
;    0224  0     ! internal register definitions
;    0225  0     !
;    0226  0     !       common register definitions
;    0227  0     !
;    0228  0     MACRO
;  M 0229  0             COMMON_FABREG =
;    0230  0                     R_FAB, R_IFAB, R_IFAB_FILE, R_IMPURE %,
;    0231  0
;  M 0232  0             COMMON_IOREG =
;    0233  0                     R_BDB, R_BKT_ADDR %,
;    0234  0
;  M 0235  0             COMMON_RABREG =
;    0236  0                     R_RAB, R_IRAB, R_IFAB, R_IMPURE%,
;    0237  0
;  M 0238  0             COMMON_FAB_STR =
;  M 0239  0                     R_FAB_STR,
;  M 0240  0                     R_IFAB_STR,
;  M 0241  0                     R_IFAB_FILE_STR,
;    0242  0                     R_IMPURE_STR %,
;    0243  0
;  M 0244  0             COMMON_IO_STR =
;  M 0245  0                     R_BDB_STR,
;    0246  0                     R_BKT_ADDR_STR %,
;    0247  0
;  M 0248  0             COMMON_RAB_STR =
;  M 0249  0                     R_RAB_STR,
;  M 0250  0                     R_IRAB_STR,
;  M 0251  0                     R_IFAB_STR,
;    0252  0                     R_IMPURE_STR%;
;    0253  0
;    0254  0
;    0255  0     !       miscellaneous register definitions
;    0256  0     !       the macros associated with registers will follow these conventions:
;    0257  0     !               macro r_name =
;    0258  0     !                       name = register_number %; (no trailing punctuation)
;    0259  0     !               to be used basically in a linkage statement, and
;    0260  0     !               macro r_name_str =
;    0261  0     !                       r_name : ref bblock %;  (or whatever structure)
;    0262  0     !               to be used basically in external or global register declarations
;    0263  0     MACRO
;  M 0264  0             R_BDB =
;    0265  0                     BDB     = 4 %,
;  M 0266  0             R_BKT_ADDR =
;    0267  0                     BKT_ADDR = 5 %,
;  M 0268  0             R_FAB   =
;    0269  0                     FAB     = 8 %,
;  M 0270  0             R_IDX_DFN =
;    0271  0                     IDX_DFN = 7 %,
;  M 0272  0             R_IFAB_FILE =
;    0273  0                     IFAB_FILE = 9 %,
;  M 0274  0             R_IMPURE =
;    0275  0                     IMPURE  = 11 %,
;  M 0276  0             R_IRAB =
```

```
;    0277  0                IRAB    = 9 %,
; M  0278  0          R_RAB =
;    0279  0                RAB     = 8 %,
; M  0280  0          R_REC_ADDR =
;    0281  0                REC_ADDR = 6 %,
; M  0282  0          R_IFAB =
;    0283  0                IFAB    = 10 %,
;    0284  0
;    0285  0
; M  0286  0          R_BDB_STR =
;    0287  0                R_BDB    : REF BBLOCK %,
; M  0288  0          R_BKT_ADDR_STR =
;    0289  0                R_BKT_ADDR : REF BBLOCK %,
; M  0290  0          R_FAB_STR =
;    0291  0                R_FAB    : REF BBLOCK %,
; M  0292  0          R_ID_STR =
;    0293  0                R_ID     : BYTE %,
; M  0294  0          R_IDX_DFN_STR =
;    0295  0                R_IDX_DFN : REF BBLOCK %,
; M  0296  0          R_IFAB_STR =
;    0297  0                R_IFAB   : REF BBLOCK %,
; M  0298  0          R_IMPURE_STR =
;    0299  0                R_IMPURE : REF BBLOCK %,
; M  0300  0          R_IRAB_STR =
;    0301  0                R_IRAB   : REF BBLOCK %,
; M  0302  0          R_RAB_STR =
;    0303  0                R_RAB    : REF BBLOCK %,
; M  0304  0          R_REC_ADDR_STR =
;    0305  0                R_REC_ADDR : REF BBLOCK %,
; M  0306  0          R_IFAB_FILE_STR =
;    0307  0                R_IFAB_FILE : REF BBLOCK %,
; M  0308  0          R_VBN_STR =
;    0309  0                R_VBN           %;
;    0310  0
```

```
;    0311  0      !
;    0312  0      !       macro to make the status codes small
;    0313  0      !
;  M 0314  0      MACRO WORDMASK(CODE) = (
;  M 0315  0              (CODE AND %X'FFFF'))
;    0316  0              %;
;  M 0317  0      MACRO RMSERR (CODE) = (
;  M 0318  0              %NAME('RMS$_',CODE) AND %X'FFFF')
;    0319  0              %,
;    0320  0
;  M 0321  0           RMSSUC (CODE) = (
;  M 0322  0              %IF %LENGTH EQL 0 %THEN
;  M 0323  0                      1
;  M 0324  0              %ELSE
;  M 0325  0                      %NAME('RMS$_',CODE) AND %X'FFFF'
;  M 0326  0              %FI)
;    0327  0              %;
;    0328  0      !
;    0329  0      ! macro to make constants that are calculated have the <0,16> attribute
;    0330  0      !
;    0331  0      !
;    0332  0      !       macros to make the code a little nicer
;    0333  0      !
;    0334  0      MACRO
;    0335  0      !
;    0336  0      ! this macro allows you to make a call to another routine
;    0337  0      !  (and do whatever you want in a block before the call),
;    0338  0      ! and if an error resulted, do whatever you want and
;    0339  0      !   then return with the status.
;    0340  0      !
;  M 0341  0          RETURN_ON_ERROR (CALL) [] =
;  M 0342  0              (LOCAL STATUS;
;  M 0343  0               IF NOT (STATUS = (CALL)) THEN
;  M 0344  0                                               (%REMAINING;
;    0345  0                                                RETURN .STATUS)) %,
;    0346  0
;    0347  0      !
;    0348  0      ! this macro is the same as the one above, except that it
;    0349  0      !  it returns w/ status whether or not there was an error
;    0350  0      !  and the caller can supply an 'else' block
;    0351  0      !   note:  the 'call' part and 'else' part must be separated by a comma
;    0352  0      !    not a semicolon and the 'else' part must be terminated by a semicolon
;    0353  0      !
;  M 0354  0          RETURN_ELSE (CALL) [] =
;  M 0355  0              (LOCAL STATUS;
;  M 0356  0               IF NOT (STATUS = (CALL)) THEN RETURN .STATUS
;  M 0357  0               ELSE
;  M 0358  0                       %REMAINING
;  M 0359  0                       RETURN .STATUS)
;    0360  0          %;
```

```
;    0361  0      ! this is an internal cache macro to put the value of the flags into cshtmp
;  M 0362  0      MACRO IRP(A)[] =
;  M 0363  0              %ASSIGN (CSHTMP,CSHTMP OR %NAME('CSH$M_',A));
;  M 0364  0              IRP(%REMAINING);
;    0365  0              %;
;    0366  0      !
;    0367  0      ! this is an internal cache macro to verify the cache flags and set them up
;  M 0368  0      MACRO $CSHFLAGS(FLAGS) =
;  M 0369  0              COMPILETIME CSHTMP = 0;
;  M 0370  0              %IF NOT %NULL(FLAGS) %THEN
;  M 0371  0                      IRP (%REMOVE(FLAGS));
;  M 0372  0              %FI;
;  M 0373  0      !       %IF (CSHTMP AND CSH$M_READAHEAD) NEQ 0 %THEN
;  M 0374  0      !               %ASSIGN (CSHTMP,CSHTMP OR CSH$M_NOWAIT);
;  M 0375  0      !               %IF (CSHTMP AND
;  M 0376  0      !                   (CSH$M_LOCK OR CSH$M_NOREAD OR CSH$M_NOBUFFER))
;  M 0377  0      !                     NEQ 0 %THEN
;  M 0378  0      !                             %ERRORMACRO ('INVALID CACHE FLAG COMBINATION');
;  M 0379  0      !               %FI;
;  M 0380  0      !       %FI;
;  M 0381  0              %IF (CSHTMP AND CSH$M_NOBUFFER)  NEQ 0 %THEN
;  M 0382  0                      %ASSIGN (CSHTMP,CSHTMP OR CSH$M_NOREAD);
;  M 0383  0              %FI;
;    0384  0              %;
;    0385  0      !
;    0386  0      ! this is a macro to call cache or cachec
;    0387  0      !
;  M 0388  0      MACRO CACHE (VBN,SIZE,FLAGS,EP) =
;  M 0389  0          BEGIN
;  M 0390  0              %IF %NULL(FLAGS) %THEN
;  M 0391  0                      COMPILETIME CSHTMP = 0
;  M 0392  0              %ELSE
;  M 0393  0              $CSHFLAGS(FLAGS)
;  M 0394  0              %FI;
;  M 0395  0              %IF %NULL(EP) %THEN
;  M 0396  0                      RM$CACHE(VBN,SIZE,CSHTMP)
;  M 0397  0              %ELSE
;  M 0398  0                      %NAME('RM$CACHE',EP)(VBN,SIZE,CSHTMP)
;  M 0399  0              %FI
;  M 0400  0          END
;    0401  0              %;
;    0402  0      !
;    0403  0      ! this is a macro to call getbkt or getbktc
;    0404  0      !
;  M 0405  0      MACRO GETBKT (VBN,SIZE,FLAGS,EP) =
;  M 0406  0          BEGIN
;  M 0407  0              %IF %NULL(FLAGS) %THEN
;  M 0408  0                      COMPILETIME CSHTMP = 0
;  M 0409  0              %ELSE
;  M 0410  0              $CSHFLAGS(FLAGS)
;  M 0411  0              %FI;
;  M 0412  0              %IF %NULL(EP) %THEN
;  M 0413  0                      RM$GETBKT(VBN,SIZE,CSHTMP)
;  M 0414  0              %ELSE
;  M 0415  0                      %NAME('RM$GETBKT',EP)(VBN,SIZE,CSHTMP)
;  M 0416  0              %FI
;  M 0417  0          END
```

```
;    0418  0              %;
;    0419  0
;    0420  0
;    0421  0

```

```
:    0422  0      !
:    0423  0      ! these are macros to do probing of user structures
:    0424  0      !
:    0425  0      MACRO
:  M 0426  0          IFNORD (SIZE,ADDR,MODE) [] =
:  M 0427  0          (
:  M 0428  0          IF NOT PROBER(
:  M 0429  0              %IF %NULL(MODE) %THEN 0 %ELSE MODE %FI,
:  M 0430  0              SIZE,
:  M 0431  0              ADDR)
:  M 0432  0          THEN
:  M 0433  0              %REMAINING)
:    0434  0          %,
:    0435  0
:  M 0436  0          IFNOWRT (SIZE,ADDR,MODE) [] =
:  M 0437  0          (
:  M 0438  0          IF NOT PROBEW(
:  M 0439  0              %IF %NULL(MODE) %THEN 0 %ELSE MODE %FI,
:  M 0440  0              SIZE,
:  M 0441  0              ADDR)
:  M 0442  0          THEN
:  M 0443  0              %REMAINING)
:    0444  0          %,
:    0445  0
:  M 0446  0          IFRD (SIZE,ADDR,MODE) [] =
:  M 0447  0          (
:  M 0448  0          IF PROBER(
:  M 0449  0              %IF %NULL(MODE) %THEN 0 %ELSE MODE %FI,
:  M 0450  0              SIZE,
:  M 0451  0              ADDR)
:  M 0452  0          THEN
:  M 0453  0              %REMAINING)
:    0454  0          %,
:    0455  0      ! macros to do long probes
:    0456  0          READ_LONG(SIZE,ADDR,MODE) = NOT RM$NOREAD_LONG(SIZE,ADDR,MODE) %,
:    0457  0
:    0458  0          WRT_LONG(SIZE,ADDR,MODE) = NOT RM$NOWRT_LONG(SIZE,ADDR,MODE) %;
```

```
;    0459  0      !
;    0460  0      ! macro to release a bucket and clear the location where its bdb addr is stored
;    0461  0      !
;M   0462  0      MACRO RELEASE(B) =
;M   0463  0              BEGIN
;M   0464  0              BDB = .B;
;M   0465  0              B = 0;
;M   0466  0              RM$RLSBKT(0);
;    0467  0              END%;
;    0468  0      !
;    0469  0      ! macro to make sure that an assumption made about the position of symbols
;    0470  0      ! in a structure is still valid
;    0471  0      ! the arguments to this macro must be preceded by %quote
;    0472  0      ! e.g., assume (%quote ifb$b_bid, %quote ifb$b_bln);
;    0473  0      !
;M   0474  0       MACRO ASSUME (A,B) =
;M   0475  0              %IF $BYTEOFFSET(A) + $BYTESIZE(A) NEQ $BYTEOFFSET(B)
;M   0476  0              %THEN %WARN('WARNING CONSTANT HAS CHANGED')
;    0477  0              %FI %;
;    0478  0      !
;    0479  0      ! this version of assume is good for constants
;    0480  0      ! e.g. assume (irc$c_fixovhdsz + 2, irc$c_varovhdsz);
;    0481  0      !
;M   0482  0       MACRO ASSUME_C (A,B) =
;M   0483  0              %IF $BYTEOFFSET(A)  NEQ $BYTEOFFSET(B)
;M   0484  0              %THEN %WARN('WARNING CONSTANT HAS CHANGED')
;    0485  0              %FI %;
;    0486  0      !       [ 2 0 1 , 1 0 ] R M S I D X L N K . R 3 2
;    0487  0      !                       !
;    0488  0      !       Define subroutine linkage
;    0489  0      !
;    0490  0      !
;    0491  0      !*****************************************************************************
;    0492  0      !*                                                                           *
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;    0510  0      !*                                                                           *
;    0511  0      !*                                                                           *
;    0512  0      !*****************************************************************************
;    0513  0
;    0514  0      !++
;    0515  0      !
```

```
;  0516  0     ! FACILITY:     RMS32 INDEX SEQUENTIAL FILE ORGANIZATION
;  0517  0     !
;  0518  0     ! ABSTRACT:
;  0519  0     !               This module defines all the routine linkage
;  0520  0     !
;  0521  0     !
;  0522  0     ! ENVIRONMENT:
;  0523  0     !
;  0524  0     !               VAX/VMS OPERATING SYSTEM
;  0525  0     !
;  0526  0     !--
;  0527  0     !
;  0528  0     ! AUTHOR:  D. H. Gillespie     CREATION DATE:  17-MAR-1978
;  0529  0     !          and W. Koenig
;  0530  0     !
;  0531  0     ! MODIFIED BY:
;  0532  0     !
;  0533  0     !       V03-024 RAS0154         Ron Schaefer            2-May-1983
;  0534  0     !               Add NOPRESERVE (R2) to L_EXTEND0 linkage.
;  0535  0     !
;  0536  0     !       V03-023 MCN0020         Maria del C. Nasr       07-Apr-1983
;  0537  0     !               Eliminage linkages of RM$NULLKEY,and RM$COMPRESS_KEY.
;  0538  0     !               They will be using general linkages.  Modify L_ALLOC3,
;  0539  0     !               and L_EXTEND0 to use parameters instead of global registers.
;  0540  0     !
;  0541  0     !       V03-022 MCN0019         Maria del C. Nasr       05-Apr-1983
;  0542  0     !               Preserve all registers except R0 and R1 in linkage
;  0543  0     !               FABREG.  RM$XSUM0 requires a separate linkage because
;  0544  0     !               it cannot preserve R4.
;  0545  0     !
;  0546  0     !       V03-021 TMK0001         Todd M. Katz            26-Mar-1983
;  0547  0     !               Add the linkage RABREG_4.
;  0548  0     !
;  0549  0     !       V03-020 MCN0018         Maria del C. Nasr       24-Mar-1983
;  0550  0     !               Define new general linkages.  Also, since the linkages
;  0551  0     !               have changed so much, eliminate all history comments.
;  0552  0     !
;  0553  0     !**********************************************************************
```

```
;  0554  0     !
;  0555  0     !       This module defines all the routine linkage for RMS-32 index file
;  0556  0     !       organization.
;  0557  0     !
;  0558  0     !       KEEP THESE DEFINITIONS IN ALPHABETICAL ORDER PLEASE
;  0559  0     !
;  0560  0     !       The following conventions will be used for linkage macros:
;  0561  0     !
;  0562  0     !               MACRO L_NAME =
;  0563  0     !                       RL$NAME =
;  0564  0     !                       JSB (REGISTERS) :
;  0565  0     !                       GLOBAL (REGISTER DEFINITIONS) %;
;  0566  0     !
;  0567  0     !               The register definitions are macros of the forms
;  0568  0     !                       COMMON_FABREG, COMMON_RABREG, COMMON_IOREG, etc.
;  0569  0     !                       or R_REGNAME as described in RMSIDXMAC.R32
;  0570  0     !
;  0571  0     MACRO
;  0572  0
;M 0573  0             L_ALDBUF =
;M 0574  0                     RL$ALDBUF =
;M 0575  0                     JSB (REGISTER = 5) :
;M 0576  0                     GLOBAL (R_IMPURE, R_IFAB)
;M 0577  0                     NOPRESERVE (2,3,4)
;  0578  0                     NOTUSED (8,9) %,
;  0579  0
;M 0580  0             L_ALLOC3 =
;M 0581  0                     RL$ALLOC3 =
;M 0582  0                     JSB (REGISTER = 7; REGISTER = 1, REGISTER = 2) :
;  0583  0                     GLOBAL (R_IFAB) %,
;  0584  0
;M 0585  0             L_BDBALLOC =
;M 0586  0                     RL$BDBALLOC =
;M 0587  0                     JSB (REGISTER = 4, REGISTER = 5) :
;M 0588  0                     GLOBAL (COMMON_RABREG)
;  0589  0                     NOPRESERVE (2,3,4,5,6) %,
;  0590  0
;M 0591  0             L_CACHE =
;M 0592  0                     RL$CACHE =
;M 0593  0                     JSB (REGISTER = 1, REGISTER = 2, REGISTER = 3) :
;M 0594  0                     GLOBAL (COMMON_IOREG)
;M 0595  0                     NOPRESERVE (1,2,3)
;  0596  0                     NOTUSED (8,9,10,11) %,
;  0597  0
;M 0598  0             L_CHECK_SEGMENT=
;M 0599  0                     RL$CHECK_SEGMENT =
;M 0600  0                     JSB (REGISTER = 0, REGISTER = 4, REGISTER = 2) :
;M 0601  0                     GLOBAL (R_IDX_DFN)
;M 0602  0                     NOPRESERVE (2,4,5)
;  0603  0                     PRESERVE (1) %,
;  0604  0
;M 0605  0             L_CHKSUM =
;M 0606  0                     RL$CHKSUM =
;M 0607  0                     JSB (REGISTER = 5) :
;  0608  0                     NOPRESERVE (0,1,2) %,
;  0609  0
;M 0610  0             L_COMPARE_KEY =
```

```
;  M 0611  0                    RL$COMPARE_KEY =
;  M 0612  0                    JSB (REGISTER = 1, REGISTER = 3, REGISTER = 0) :
;  M 0613  0                    GLOBAL (R_IDX_DFN)
;    0614  0                    NOPRESERVE (3) %,
;    0615  0
;  M 0616  0            L_ERROR_LINK1 =
;  M 0617  0                    RL$ERROR_LINK1 =
;  M 0618  0                    JSB () :
;  M 0619  0                    GLOBAL (COMMON_RABREG)
;    0620  0                    PRESERVE (0) %,
;    0621  0
;  M 0622  0            L_ERROR_LINK2 =
;  M 0623  0                    RL$ERROR_LINK2 =
;  M 0624  0                    JSB () :
;  M 0625  0                    GLOBAL (COMMON_RABREG, R_IDX_DFN)
;    0626  0                    PRESERVE (0) %,
;    0627  0
;  M 0628  0            L_EXTENDO =
;  M 0629  0                    RL$EXTENDO =
;  M 0630  0                    JSB (REGISTER = 5, REGISTER = 6; REGISTER = 1, REGISTER = 6) :
;  M 0631  0                    GLOBAL (COMMON_FABREG)
;    0632  0                    NOPRESERVE (2,3,4,5) %,
;    0633  0
;  M 0634  0            L_FABREG =
;  M 0635  0                    RL$FABREG =
;  M 0636  0                    JSB () :
;  M 0637  0                    GLOBAL (COMMON_FABREG)
;    0638  0                    NOPRESERVE (0,T) %,
;    0639  0
;  M 0640  0            L_FABREG_7 =
;  M 0641  0                    RL$FABREG_7 =
;  M 0642  0                    JSB () :
;    0643  0                    GLOBAL (COMMON_FABREG, R_IDX_DFN) %,
;    0644  0
;  M 0645  0            L_GETSPC =
;  M 0646  0                    RL$GETSPC =
;  M 0647  0                    JSB (REGISTER = 1, REGISTER = 2; REGISTER = 1) :
;  M 0648  0                    GLOBAL (R_IMPURE)
;  M 0649  0                    NOPRESERVE (2,3,4)
;    0650  0                    NOTUSED (8,9,10) %,
;    0651  0
;  M 0652  0            L_JSB =
;  M 0653  0                    RL$JSB =
;    0654  0                    JSB () %,
;    0655  0
;  M 0656  0            L_JSB01 =
;  M 0657  0                    RL$JSB01 =
;  M 0658  0                    JSB (REGISTER = 0, REGISTER = 1) :
;  M 0659  0                    GLOBAL (R_BKT_ADDR, R_REC_ADDR, R_IDX_DFN, R_IRAB, R_IFAB)
;    0660  0                    NOPRESERVE (0,1) %,
;    0661  0
;  M 0662  0            L_LINK_7_10_11 =
;  M 0663  0                    RL$LINK_7_10_11 =
;  M 0664  0                    JSB () :
;  M 0665  0                    GLOBAL (R_IDX_DFN, R_IFAB, R_IMPURE)
;    0666  0                    NOPRESERVE (0,1) %,
;    0667  0
```

```
; M 0668  0               L_PRESERVE1 =
; M 0669  0                       RL$PRESERVE1 =
; M 0670  0                       JSB () :
; M 0671  0                       GLOBAL (COMMON_RABREG, R_BDB, R_REC_ADDR, R_IDX_DFN)
;   0672  0                       PRESERVE (1) %,
;   0673  0
; M 0674  0               L_QUERY_AND_LOCK =
; M 0675  0                       RL$QUERY_AND_LOCK =
; M 0676  0                       JSB (REGISTER = 1, REGISTER = 2) :
; M 0677  0                       GLOBAL (COMMON_RABREG)
;   0678  0                       NOPRESERVE (3) %,
;   0679  0
; M 0680  0               L_RABREG =
; M 0681  0                       RL$RABREG =
; M 0682  0                       JSB () :
; M 0683  0                       GLOBAL (COMMON_RABREG)
;   0684  0                       NOPRESERVE (0,T) %,
;   0685  0
; M 0686  0               L_RABREG_4 =
; M 0687  0                       RL$RABREG_4 =
; M 0688  0                       JSB () :
; M 0689  0                       GLOBAL (COMMON_RABREG, R_BDB)
;   0690  0                       NOPRESERVE (0,T) %,
;   0691  0
; M 0692  0               L_RABREG_4567 =
; M 0693  0                       RL$RABREG_4567 =
; M 0694  0                       JSB () :
; M 0695  0                       GLOBAL (COMMON_RABREG, COMMON_IOREG, R_REC_ADDR, R_IDX_DFN)
;   0696  0                       NOPRESERVE (0,T) %,
;   0697  0
; M 0698  0               L_RABREG_457 =
; M 0699  0                       RL$RABREG_457 =
; M 0700  0                       JSB () :
; M 0701  0                       GLOBAL (COMMON_RABREG, COMMON_IOREG, R_IDX_DFN)
;   0702  0                       NOPRESERVE (0,T) %,
;   0703  0
; M 0704  0               L_RABREG_467 =
; M 0705  0                       RL$RABREG_467 =
; M 0706  0                       JSB () :
; M 0707  0                       GLOBAL (COMMON_RABREG, R_BDB, R_REC_ADDR, R_IDX_DFN)
;   0708  0                       NOPRESERVE (0,T) %,
;   0709  0
; M 0710  0               L_RABREG_567 =
; M 0711  0                       RL$RABREG_567 =
; M 0712  0                       JSB () :
; M 0713  0                       GLOBAL (COMMON_RABREG, R_BKT_ADDR, R_REC_ADDR, R_IDX_DFN)
;   0714  0                       NOPRESERVE (0,T) %,
;   0715  0
; M 0716  0               L_RABREG_67 =
; M 0717  0                       RL$RABREG_67 =
; M 0718  0                       JSB () :
; M 0719  0                       GLOBAL (COMMON_RABREG, R_REC_ADDR, R_IDX_DFN)
;   0720  0                       NOPRESERVE (0,T) %,
;   0721  0
; M 0722  0               L_RABREG_7 =
; M 0723  0                       RL$RABREG_7 =
; M 0724  0                       JSB () :
```

```
;  M 0725  0                GLOBAL (COMMON_RABREG, R_IDX_DFN)
;    0726  0                NOPRESERVE (0,T) %,
;    0727  0
;  M 0728  0            L_REC_OVHD =
;  M 0729  0                RL$REC_OVHD =
;  M 0730  0                JSB (REGISTER = 1; REGISTER = 1) :
;    0731  0                GLOBAL (R_REC_ADDR, R_IDX_DFN, R_IFAB) %,
;    0732  0
;  M 0733  0            L_RELEASE =
;  M 0734  0                RL$RELEASE =
;  M 0735  0                JSB (REGISTER = 3) :
;  M 0736  0                GLOBAL (R_BDB, R_IRAB, R_IFAB, R_IMPURE)
;  M 0737  0                NOPRESERVE (1,2)
;    0738  0                NOTUSED (8) %,
;    0739  0
;  M 0740  0            L_RELEASE_FAB =
;  M 0741  0                RL$RELEASE_FAB =
;  M 0742  0                JSB (REGISTER = 3) :
;  M 0743  0                GLOBAL (R_BDB, R_IFAB, R_IFAB_FILE, R_IMPURE)
;  M 0744  0                NOPRESERVE (1,2)
;    0745  0                NOTUSED(8) %,
;    0746  0
;  M 0747  0            L_RETSPC =
;  M 0748  0                RL$RETSPC =
;  M 0749  0                JSB (REGISTER= 2, REGISTER = 3, REGISTER = 4) :
;  M 0750  0                GLOBAL (R_IMPURE)
;  M 0751  0                NOPRESERVE (2,3,5)
;    0752  0                NOTUSED (8,9,10) %,
;    0753  0
;  M 0754  0            L_SIDR_FIRST =
;  M 0755  0                RL$SIDR_FIRST =
;  M 0756  0                JSB (STANDARD; REGISTER = 1, REGISTER = 2) :
;    0757  0                GLOBAL (R_REC_ADDR, R_IDX_DFN, COMMON_RABREG) %,
;    0758  0
;  M 0759  0            L_XSUMO =
;  M 0760  0                RL$XSUMO =
;  M 0761  0                JSB () :
;  M 0762  0                GLOBAL (COMMON_FABREG)
;    0763  0                NOPRESERVE (0,T,4) %;
;    0764  0
;    0765  0
;    0766  0        ********************************************************************************
;    0767  0        *                                                                              *
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```

```
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0783  0     ! *  software on equipment which is not supplied by DIGITAL.                  *
0784  0     ! *                                                                           *
0785  0     ! *****************************************************************************
0786  0     ! *****************************************************************************************************************
0787  0     !  Created 15-SEP-1984 22:54:35  by  VAX-11 SDL V2.0       Source: 15-SEP-1984 22:49:24  _$255$DUA28:[RMS.SRC]RMSINTS
0788  0     ! *****************************************************************************************************************
0789  0
0790  0
0791  0     !*** MODULE $IFBDEF ***
0792  0     !
0793  0     !   NOTE:  The fields thru JNLBDB inclusive are common between the ifb and irb
0794  0     !
0795  0     literal IFB$C_BID = 11;                 !  ifab id code
0796  0     literal IFB$M_PUT = 1;
0797  0     literal IFB$M_GET = 2;
0798  0     literal IFB$M_DEL = 4;
0799  0     literal IFB$M_UPD = 8;
0800  0     literal IFB$M_TRN = 16;
0801  0     literal IFB$M_BIO = 32;
0802  0     literal IFB$M_BRO = 64;
0803  0     literal IFB$M_EXE = 128;
0804  0     literal IFB$C_SEQ = 0;                  !  sequential
0805  0     literal IFB$C_REL = 1;                  !  relative
0806  0     literal IFB$C_IDX = 2;                  !  indexed
0807  0     literal IFB$C_DIR = 3;                  !  direct
0808  0     literal IFB$C_MAXORG = 2;               !  release 1.5 maximum
0809  0     literal IFB$K_FHAEND = 102;             !  end of file header attributes
0810  0     literal IFB$C_FHAEND = 102;             !  end of file header attributes
0811  0     literal IFB$C_KBUFNUM = 6;              !  constant - the number of key buffers allocated
0812  0     literal IFB$M_ONLY_RU = 1;
0813  0     literal IFB$M_RU = 2;
0814  0     literal IFB$M_BI = 4;
0815  0     literal IFB$M_AI = 8;
0816  0     literal IFB$M_AT = 16;
0817  0     literal IFB$M_NEVER_RU = 32;
0818  0     literal IFB$M_RU_RECVR = 1;
0819  0     literal IFB$M_AI_RECVR = 2;
0820  0     literal IFB$M_BI_RECVR = 4;
0821  0     literal IFB$M_VALID_AT = 1;
0822  0     literal IFB$M_JNL = 2;
0823  0     literal IFB$M_RUP = 4;
0824  0     literal IFB$M_RU_RLK = 8;
0825  0     literal IFB$M_DONE_ASS_JNL = 16;
0826  0     literal IFB$K_BLN_SEQ = 172;
0827  0     literal IFB$C_BLN_SEQ = 172;
0828  0     ! --
0829  0     !
0830  0     !   organization-dependent fields
0831  0     !
0832  0     !   the following fields are used differently
0833  0     !   depending upon the file's organization
0834  0     !
0835  0     ! ++
0836  0     !
0837  0     !   relative org specific fields
0838  0     !
```

```
;    0839  0     literal IFB$S_IFBDEF = 172;
;    0840  0     !  (but have definitions that allow them to
;    0841  0     !   be referenced from the start of the ifab)
;    0842  0     ! ++
;    0843  0     !   the following bits are defined in
;    0844  0     !   common with the irab
;    0845  0     !
;    0846  0     macro IFB$V_BUSY = 4,0,1,0 %;           !  stream busy
;    0847  0     macro IFB$V_EOF = 4,1,1,0 %;            !  file positioned at eof
;    0848  0     macro IFB$V_PPF_IMAGE = 4,2,1,0 %;      !  flag for indirect processing of process-
;    0849  0     !  permanent files (restricts allowable operations)
;    0850  0     macro IFB$V_ASYNC = 4,3,1,0 %;          !  async i/o flag (must be zero for ifab)
;    0851  0     macro IFB$V_ASYNCWAIT = 4,4,1,0 %;      !  wait on async i/o (must be zero for ifab)
;    0852  0     ! --
;    0853  0     !
;    0854  0     !   ifab specific bits
;    0855  0     !
;    0856  0     macro IFB$V_ACCESSED = 4,5,1,0 %;       !  file is accessed
;    0857  0     macro IFB$V_ANSI_D = 4,6,1,0 %;         !  ansi d variable records
;    0858  0     macro IFB$V_RWC = 4,7,1,0 %;            !  copy of fop bit from open
;    0859  0     macro IFB$V_DMO = 4,8,1,0 %;            !  copy of fop bit from open
;    0860  0     macro IFB$V_SPL = 4,9,1,0 %;            !  copy of fop bit from open
;    0861  0     macro IFB$V_SCF = 4,10,1,0 %;           !  copy of fop bit from open
;    0862  0     macro IFB$V_DLT = 4,11,1,0 %;           !  copy of fop bit from open
;    0863  0     macro IFB$V_DFW = 4,12,1,0 %;           !  deferred write (copy of fop bit from $open)
;    0864  0     macro IFB$V_SQO = 4,13,1,0 %;           !  sequential operations only
;    0865  0     macro IFB$V_PPF_INPUT = 4,14,1,0 %;     !  this is command 'input' stream
;    0866  0     macro IFB$V_NFS = 4,15,1,0 %;           !  non-file structured flag
;    0867  0     macro IFB$V_WRTACC = 4,16,1,0 %;        !  logical or of fac bits:
;    0868  0     !     put, upd, del, trn
;    0869  0     macro IFB$V_MSE = 4,17,1,0 %;           !  multi-streams enabled
;    0870  0     macro IFB$V_CREATE = 4,18,1,0 %;        !  set if doing create (may be "create if")
;    0871  0     macro IFB$V_NORECLK = 4,19,1,0 %;       !  record locking not required
;    0872  0     !  (i.e., no shared access or multi-stream)
;    0873  0     macro IFB$V_RW_ATTR = 4,20,1,0 %;       !  set if file attributes must be re-written
;    0874  0     macro IFB$V_TMP = 4,21,1,0 %;           !  temporary file (i.e., no directory entry)
;    0875  0     macro IFB$V_TEF = 4,22,1,0 %;           !  truncate at eof due to large auto extend
;    0876  0     macro IFB$V_STALL_LOCK = 4,23,1,0 %;    !  RMS is stalled for file lock
;    0877  0     macro IFB$V_SEQFIL = 4,24,1,0 %;        !  this is really a sequential file being shared
;    0878  0     macro IFB$V_SEARCH = 4,25,1,0 %;        !  search ifab - left during wildcard operations
;    0879  0     macro IFB$V_RMS_STALL = 4,26,1,0 %;     !  RMS is stalled on this file operation
;    0880  0     macro IFB$V_RESTART = 4,27,1,0 %;       !  Reopen or recreate operation in progress
;    0881  0     macro IFB$V_FILEFOUND = 4,28,1,0 %;     !  A file was found on a search operation
;    0882  0     macro IFB$V_DAP_OPEN = 4,29,1,0 %;      !  open/create function was performed via dap
;    0883  0     macro IFB$V_DAP = 4,30,1,0 %;           !  data access protocol transmission
;    0884  0     macro IFB$V_NSP = 4,31,1,0 %;           !  network services protocol transmission
;    0885  0     macro IFB$L_PRIM_DEV = 0,0,32,0 %;      !  device characteristics bits
;    0886  0     !  (for primary device - bit encoding same as for fab)
;    0887  0     macro IFB$L_BKPBITS = 4,0,32,0 %;       !  bookkeeping bits
;    0888  0     !
;    0889  0     macro IFB$B_BID = 8,0,8,0 %;            !  block id
;    0890  0     macro IFB$B_BLN = 9,0,8,0 %;            !  block length in longwords
;    0891  0     macro IFB$B_MODE = 10,0,8,0 %;          !  caller's mode
;    0892  0     macro IFB$B_EFN = 11,0,8,0 %;           !  event flag used for synchronous qio
;    0893  0     macro IFB$L_IOS = 12,0,32,0 %;          !  internal i/o status block
;    0894  0     macro IFB$L_BWB = 12,0,32,0 %;          !  bucket wait block for inter stream waiting
;    0895  0     macro IFB$W_IOS2 = 14,0,16,0 %;         !  high word of io status block
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;  0896  0     macro IFB$L_IOS4 = 16,0,32,0 %;          !  2nd longword of io status block
;  0897  0     macro IFB$L_ASBADDR = 20,0,32,0 %;       !  address of asynchronous context block
;  0898  0     macro IFB$L_ARGLST = 24,0,32,0 %;        !  user call parameters addr
;  0899  0     macro IFB$L_IRAB_LNK = 28,0,32,0 %;      !  pointer to irab(s)
;  0900  0     macro IFB$W_CHNL = 32,0,16,0 %;          !  i/o channel number
;  0901  0     macro IFB$B_FAC = 34,0,8,0 %;            !  file access
;  0902  0     macro IFB$V_PUT = 34,0,1,0 %;            !  (same as in fab's fac field)
;  0903  0     macro IFB$V_GET = 34,1,1,0 %;
;  0904  0     macro IFB$V_DEL = 34,2,1,0 %;
;  0905  0     macro IFB$V_UPD = 34,3,1,0 %;
;  0906  0     macro IFB$V_TRN = 34,4,1,0 %;
;  0907  0     macro IFB$V_BIO = 34,5,1,0 %;
;  0908  0     macro IFB$V_BRO = 34,6,1,0 %;
;  0909  0     macro IFB$V_EXE = 34,7,1,0 %;
;  0910  0     !  note: if both bio and bro set, implies block i/o
;  0911  0     !        access only allowed for this connect, resets
;  0912  0     !        to bro on disconnect (seq. file org. only).
;  0913  0     !
;  0914  0     macro IFB$B_ORGCASE = 35,0,8,0 %;        !  copy of org for case dispatching
;  0915  0     macro IFB$L_LAST_FAB = 36,0,32,0 %;      !  address of fab for last operation
;  0916  0     macro IFB$W_IFI = 40,0,16,0 %;           !  Internal file Identifier, the one we gave to the user
;  0917  0     macro IFB$W_ECHO_ISI = 42,0,16,0 %;      !  ISI of stream to echo records from SYS$INPUT
;  0918  0     macro IFB$L_ATJNLBUF = 44,0,32,0 %;      !  address of IFAB audit trail buffer
;  0919  0     macro IFB$L_JNLBDB = 48,0,32,0 %;        !  address of Journaling BDB for FAB operations
;  0920  0     ! ----------
;  0921  0     macro IFB$L_EXTJNLBUF = 52,0,32,0 %;     !  pointer to buffer to contain extend journal record
;  0922  0     macro IFB$L_FWA_PTR = 56,0,32,0 %;       !  pointer to file work area control block
;  0923  0     macro IFB$L_NWA_PTR = 60,0,32,0 %;       !  pointer to network work area control block
;  0924  0     macro IFB$L_BDB_FLNK = 64,0,32,0 %;      !  pointer to bdb(s)
;  0925  0     macro IFB$L_BDB_BLNK = 68,0,32,0 %;      !  bdb backward link
;  0926  0     macro IFB$L_DEVBUFSIZ = 72,0,32,0 %;     !  device default (or bls if mt) buff size
;  0927  0     macro IFB$W_RTDEQ = 76,0,16,0 %;         !  run-time default extend quantity
;  0928  0     macro IFB$B_SHR = 78,0,8,0 %;            !  File sharing bits from users FAB
;  0929  0     macro IFB$B_AGENT_MODE = 79,0,8,0 %;     !  User's FAB$V_FILE_MODE field, maximized with mode of caller
;  0930  0     !
;  0931  0     ! ++++++++++
;  0932  0     !
;  0933  0     !   the following fields must remain as is since
;  0934  0     !   they correspond to the rms attributes stored
;  0935  0     !   in the file header
;  0936  0     !
;  0937  0     macro IFB$B_RFMORG = 80,0,8,0 %;         !  organization and record format
;  0938  0     macro IFB$V_RFM = 80,0,4,0 %;
;  0939  0     literal IFB$S_RFM = 4;                   !  record format (n.b. constant values defined in rfm field of fab)
;  0940  0     macro IFB$V_ORG = 80,4,4,0 %;
;  0941  0     literal IFB$S_ORG = 4;                   !  file organization
;  0942  0     macro IFB$B_RAT = 81,0,8,0 %;            !  record attributes (n.b. bit offsets defined in rat field of fab)
;  0943  0     macro IFB$W_LRL = 82,0,16,0 %;           !  longest record's length (or fixed record length)
;  0944  0     macro IFB$L_HBK_DISK = 84,0,32,0 %;      !  hi vbn allocated (note: disk format!)
;  0945  0     macro IFB$L_EBK_DISK = 88,0,32,0 %;      !  eof vbn (note: disk format!)
;  0946  0     macro IFB$W_FFB = 92,0,16,0 %;           !  first free byte in eof block
;  0947  0     macro IFB$B_BKS = 94,0,8,0 %;            !  bucket size (! vbns)
;  0948  0     macro IFB$B_FSZ = 95,0,8,0 %;            !  record header size for vfc
;  0949  0     macro IFB$W_MRS = 96,0,16,0 %;           !  max record size allowable
;  0950  0     macro IFB$W_DEQ = 98,0,16,0 %;           !  default extend quantity
;  0951  0     macro IFB$W_GBC = 100,0,16,0 %;          !  global buffer count
;  0952  0     ! ----------
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;    0953  0     macro IFB$B_DRT_REHIT = 104,0,8,0 %;    |  hit count for local dirty buffers.
;    0954  0     macro IFB$B_GBL_REHIT = 105,0,8,0 %;    |  rehit count for gbl buffers.
;    0955  0     macro IFB$L_RNS_LEN = 108,0,32,0 %;     |  resultant name string length (used as a temp field by $search)
;    0956  0     macro IFB$L_LOCK_BDB = 108,0,32,0 %;    |  lock bdb address (used by $extend for rel. file)
;    0957  0     macro IFB$L_HBK = 112,0,32,0 %;         |  hi vbn allocated.
;    0958  0     macro IFB$L_EBK = 116,0,32,0 %;         |  eof vbn.
;    0959  0     macro IFB$L_SFSB_PTR = 120,0,32,0 %;    |  pointer to shared file synchronization block
;    0960  0     macro IFB$L_GBSB_PTR = 124,0,32,0 %;    |  pointer to global buffer synchronization block.
;    0961  0     macro IFB$L_PAR_LOCK_ID = 128,0,32,0 %; |  Parent lock ID for bucket locks (get from SFSB.)
;    0962  0     macro IFB$W_AVLCL = 132,0,16,0 %;       |  local buffers available.
;    0963  0     macro IFB$W_AVGBPB = 134,0,16,0 %;      |  gbl ptr blocks available.
;    0964  0     macro IFB$L_GBH_PTR = 136,0,32,0 %;     |  pointer to global header.
;    0965  0     macro IFB$L_AS_DEV = 140,0,32,0 %;      |  assigned device characteristics
;    0966  0     !                       AS_DEV and ASDEVBSIZ *)
;    0967  0     macro IFB$L_ASDEVBSIZ = 148,0,32,0 %;   |  assigned device buffer size
;    0968  0     macro IFB$L_BLBFLNK = 152,0,32,0 %;     |  Forward link to BLB chain.
;    0969  0     macro IFB$L_BLBBLNK = 156,0,32,0 %;     |  Back link to BLB chain.
;    0970  0     macro IFB$B_JNLFLG = 160,0,8,0 %;       |  journaling attribute flags
;    0971  0     macro IFB$V_ONLY_RU = 160,0,1,0 %;      |  Recovery Unit journaling, no access outside RU
;    0972  0     macro IFB$V_RU = 160,1,1,0 %;           |  Recovery Unit journaling
;    0973  0     macro IFB$V_BI = 160,2,1,0 %;           |  Before Image journaling
;    0974  0     macro IFB$V_AI = 160,3,1,0 %;           |  After Image jouraling
;    0975  0     macro IFB$V_AT = 160,4,1,0 %;           |  Audit Trail journaling
;    0976  0     macro IFB$V_NEVER_RU = 160,5,1,0 %;     |  never do RU journaling
;    0977  0     macro IFB$B_RECVRFLGS = 161,0,8,0 %;    |  Recovery flags
;    0978  0     macro IFB$V_RU_RECVR = 161,0,1,0 %;     |  Recovery Unit Rollback in progress
;    0979  0     macro IFB$V_AI_RECVR = 161,1,1,0 %;     |  AI Roll Forward Recovery in progress
;    0980  0     macro IFB$V_BI_RECVR = 161,2,1,0 %;     |  BI Roll Backward Recovery in progress
;    0981  0     macro IFB$B_JNLFLG2 = 162,0,8,0 %;      |  Secondary journaling flags (generally operation specific)
;    0982  0     macro IFB$V_VALID_AT = 162,0,1,0 %;     |  AT entry in IFB buffer is valid and should be written
;    0983  0     macro IFB$V_JNL = 162,1,1,0 %;          |  Journaling Initialized for this file
;    0984  0     macro IFB$V_RUP = 162,2,1,0 %;          |  Recovery Unit in progress
;    0985  0     macro IFB$V_RU_RLK = 162,3,1,0 %;       |  Fake record locking during recovery unit
;    0986  0     macro IFB$V_DONE_ASS_JNL = 162,4,1,0 %; |  Journal channels already assigned
;    0987  0     macro IFB$L_RJB = 164,0,32,0 %;         |  RMS Journaling Block address
;    0988  0     macro IFB$W_BUFFER_OFFSET = 168,0,16,0 %; !  ANSI buffer offset
;    0989  0     literal IFB$K_BLN_REL = 180;
;    0990  0     literal IFB$C_BLN_REL = 180;
;    0991  0     ! --
;    0992  0     ! ++
;    0993  0     !
;    0994  0     !   indexed org specific fields
;    0995  0     !
;    0996  0     literal IFB$S_IFBDEF1 = 180;
;    0997  0     macro IFB$L_MRN = 172,0,32,0 %;         !  (rel) max record number
;    0998  0     macro IFB$L_DVBN = 176,0,32,0 %;        !  (rel) first data bucket vbn
;    0999  0     literal IFB$K_BLN_IDX = 184;
;    1000  0     literal IFB$C_BLN_IDX = 184;
;    1001  0     literal IFB$K_BLN = 184;                !  ifab length
;    1002  0     literal IFB$C_BLN = 184;                !  ifab length
;    1003  0     ! --
;    1004  0     literal IFB$S_IFBDEF2 = 184;
;    1005  0     macro IFB$L_IDX_PTR = 172,0,32,0 %;     !  (idx) pointer to primary key index descriptor
;    1006  0     macro IFB$B_AVBN = 176,0,8,0 %;         !  (idx) vbn of 1st area descriptor
;    1007  0     macro IFB$B_AMAX = 177,0,8,0 %;         !  (idx) total number of area descriptors
;    1008  0     macro IFB$B_NUM_KEYS = 178,0,8,0 %;     !  (idx) # of keys in file
;    1009  0     macro IFB$B_UBUFSZ = 179,0,8,0 %;       !  (idx) update buffer size for keys
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;    1010  0     macro IFB$W_KBUFSZ = 180,0,16,0 %;      !  (idx) key buffer size
;    1011  0     macro IFB$B_EXTRABUF = 182,0,8,0 %;     !  (idx) number of extra buffers for 'cache'ing
;    1012  0     macro IFB$B_PLG_VER = 183,0,8,0 %;      !  (idx) prologue version number
;    1013  0
;    1014  0     !*** MODULE $IRBDEF ***
;    1015  0     !
;    1016  0     !       IRB field definitions
;    1017  0     !
;    1018  0     !       Internal rab (irb)
;    1019  0     !
;    1020  0     !       There is 1 irab per connected record access stream
;    1021  0     !
;    1022  0     !
;    1023  0     !   NOTE: The fields thru JNLBDB inclusive are common between the irb and ifb
;    1024  0     !
;    1025  0     literal IRB$C_BID = 10;                 !  irab code
;    1026  0     literal IRB$M_POSINSERT = 1;
;    1027  0     literal IRB$M_SRCHGT = 2;
;    1028  0     literal IRB$M_POSDELETE = 4;
;    1029  0     literal IRB$M_NEW_IDX = 8;
;    1030  0     literal IRB$M_SRCAGE = 16;
;    1031  0     literal IRB$M_NORLS_RNF = 32;
;    1032  0     literal IRB$M_FIRST_TIM = 64;
;    1033  0     literal IRB$M_PRM = 128;
;    1034  0     literal IRB$M_DUP_KEY = 256;
;    1035  0     literal IRB$M_DEL_SEEN = 512;
;    1036  0     literal IRB$M_LAST_GT = 1024;
;    1037  0     literal IRB$M_BKT_NO_LO = 1;
;    1038  0     literal IRB$M_NEW_BKTS = 6;
;    1039  0     literal IRB$M_REC_W_LO = 8;
;    1040  0     literal IRB$M_CONT_BKT = 16;
;    1041  0     literal IRB$M_CONT_R = 32;
;    1042  0     literal IRB$M_EMPTY_BKT = 64;
;    1043  0     literal IRB$M_DUPS_SEEN = 128;
;    1044  0     literal IRB$M_BKT_NO = 3;
;    1045  0     literal IRB$M_BIG_SPLIT = 4;
;    1046  0     literal IRB$M_SPL_IDX = 1;
;    1047  0     literal IRB$M_EMPT_SEEN = 2;
;    1048  0     literal IRB$M_VALID_AT = 1;
;    1049  0     literal IRB$K_BLN_REL = 100;
;    1050  0     literal IRB$C_BLN_REL = 100;
;    1051  0     ! ++
;    1052  0     !
;    1053  0     !   sequential org specific fields
;    1054  0     !
;    1055  0     literal IRB$K_BLN_SEQ = 108;
;    1056  0     literal IRB$C_BLN_SEQ = 108;
;    1057  0     literal IRB$S_IRBDEF = 108;
;    1058  0     !  to apply from start of irab
;    1059  0     ! ++
;    1060  0     !
;    1061  0     !   the following bits are defined in common
;    1062  0     !   with the ifab
;    1063  0     !
;    1064  0     macro IRB$V_BUSY = 4,0,1,0 %;           !  file busy
;    1065  0     macro IRB$V_EOF = 4,1,1,0 %;            !  stream positioned at eof
;    1066  0     macro IRB$V_PPF_IMAGE = 4,2,1,0 %;      !  flag for indirect processing of process-
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;    1067  0      !  permanent file
;    1068  0      macro IRB$V_ASYNC = 4,3,1,0 %;          !  asynchronous i/o request
;    1069  0      macro IRB$V_ASYNCWAIT = 4,4,1,0 %;      !  $wait issued for asynchronous i/o request
;    1070  0      ! --
;    1071  0      !
;    1072  0      !    irab specific bits
;    1073  0      !
;    1074  0      macro IRB$V_FIND_LAST = 4,5,1,0 %;      !  last operation was a find
;    1075  0      macro IRB$V_PUTS_LAST = 4,6,1,0 %;      !  last operation was a put sequential
;    1076  0      macro IRB$V_BIO_LAST = 4,7,1,0 %;       !  this/last operation is/was a block i/o operation
;    1077  0      !  note: this bit is set only if mixed block and record
;    1078  0      !        operations (bro access).  after call to rm$rset
;    1079  0      !         refers to the current operation and bro_sw gives
;    1080  0      !         type of last operation.
;    1081  0      macro IRB$V_BRO_SW = 4,8,1,0 %;         !  switched from record operation to block i/o operation
;    1082  0      macro IRB$V_FIND = 4,9,1,0 %;           !  operation is a find
;    1083  0      macro IRB$V_RAHWBH = 4,10,1,0 %;        !  read ahead or write behind processing
;    1084  0      macro IRB$V_SKIP_NEXT = 4,11,1,0 %;     !  skip to next record flag for index fo
;    1085  0      macro IRB$V_DUP = 4,12,1,0 %;           !  duplicate records seen
;    1086  0      macro IRB$V_UNLOCK_RP = 4,13,1,0 %;     !  release lock on current (rp) record
;    1087  0      macro IRB$V_PPF_EOF = 4,14,1,0 %;       !  give one-shot rms$_eof error on sys$input
;    1088  0      macro IRB$V_PPF_SKIP = 4,15,1,0 %;      !  skip sys$input record ($deck), redoing $get
;    1089  0      !  or $find on next record
;    1090  0      macro IRB$V_PPF_FNDSV = 4,16,1,0 %;     !  save value for find bit when ppf_skip set
;    1091  0      macro IRB$V_IDX_ERR = 4,17,1,0 %;       !  index update error occurred
;    1092  0      macro IRB$V_RRV_ERR = 4,18,1,0 %;       !  rrv update error occurred
;    1093  0      macro IRB$V_UPDATE = 4,19,1,0 %;        !  operation is an update (indexed)
;    1094  0      macro IRB$V_UPDATE_IF = 4,20,1,0 %;     !  operation was a $PUT -> $UPDATE
;    1095  0      macro IRB$V_ABOVELCKD = 4,21,1,0 %;     !  level above was locked by search_tree
;    1096  0      macro IRB$V_GBLBUFF = 4,22,1,0 %;       !  global buffers are in use.
;    1097  0      macro IRB$V_CON_EOF = 4,23,1,0 %;       !  file positioned at EOF by $CONNECT (isam)
;    1098  0      macro IRB$V_NO_Q_WAIT = 4,24,1,0 %;     !  do not wait for enqueues on query locks
;    1099  0      macro IRB$V_PPF_ECHO = 4,25,1,0 %;      !  echo SYS$INPUT records to SYS$OUTPUT
;    1100  0      macro IRB$V_RMS_STALL = 4,26,1,0 %;     !  RMS is stalled on this record operation
;    1101  0      macro IRB$V_RESTART = 4,27,1,0 %;       !  Reconnect operation in progress
;    1102  0      macro IRB$V_DAP_CONN = 4,28,1,0 %;      !  connect function was performed via dap
;    1103  0      macro IRB$V_RU_DELETE = 4,29,1,0 %;     !  recovery unit deletion in progress
;    1104  0      macro IRB$V_RU_UNDEL = 4,30,1,0 %;      !  recovery unit un-deletion in progress
;    1105  0      macro IRB$V_RU_UPDATE = 4,31,1,0 %;     !  place new record is special RU UPDATE format
;    1106  0      !
;    1107  0      !    the following are alternate definitions for alternate
;    1108  0      !    (non-conflicting) use of the above bits
;    1109  0      !
;    1110  0      macro IRB$V_WRITE = 4,9,1,0 %;          !  operation is a write
;    1111  0      macro IRB$L_IFAB_LNK = 0,0,32,0 %;      !  pointer to ifab
;    1112  0      macro IRB$L_BKPBITS = 4,0,32,0 %;       !  bookkeeping status bits
;    1113  0      !
;    1114  0      macro IRB$B_BID = 8,0,8,0 %;            !  block id
;    1115  0      macro IRB$B_BLN = 9,0,8,0 %;            !  block length in longwords
;    1116  0      macro IRB$B_MODE = 10,0,8,0 %;          !  caller's mode
;    1117  0      macro IRB$B_EFN = 11,0,8,0 %;           !  event flag for synchronous io
;    1118  0      macro IRB$L_IOS = 12,0,32,0 %;          !  internal i/o status block
;    1119  0      macro IRB$L_BWB = 12,0,32,0 %;          !  bucket wait block for inter stream locking
;    1120  0      macro IRB$W_IOS2 = 14,0,16,0 %;         !  high word of io status block
;    1121  0      macro IRB$L_IOS4 = 16,0,32,0 %;         !  io status block (2nd longword)
;    1122  0      macro IRB$L_ASBADDR = 20,0,32,0 %;      !  address of permanent asynchronous context block
;    1123  0      macro IRB$L_ARGLST = 24,0,32,0 %;       !  user arg list address
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;  1124  0     !  if async, points to copy at head
;  1125  0     !  of async context block
;  1126  0     macro IRB$L_IRAB_LNK = 28,0,32,0 %;     !  pointer to next irab
;  1127  0     macro IRB$L_CURBDB = 32,0,32,0 %;       !  current bdb address
;  1128  0     macro IRB$L_LAST_RAB = 36,0,32,0 %;     !  address of rab for last operation
;  1129  0     macro IRB$W_ISI = 40,0,16,0 %;          !  Internal stream Identifier, the one we gave to the user
;  1130  0     macro IRB$L_ATJNLBUF = 44,0,32,0 %;     !  address of IRAB audit trail journaling buffer
;  1131  0     macro IRB$L_JNLBDB = 48,0,32,0 %;       !  address of journaling BDB for RAB operations
;  1132  0     ! ----------
;  1133  0     macro IRB$L_IDENT = 52,0,32,0 %;        !  process unique identifier for the IRB
;  1134  0     macro IRB$L_RLB_LNK = 56,0,32,0 %;      !  pointer to RLBs
;  1135  0     macro IRB$L_NXTBDB = 60,0,32,0 %;       !  next bdb address
;  1136  0     macro IRB$L_NRP = 64,0,32,0 %;          !  next record pointer (relative record number)
;  1137  0     macro IRB$L_NRP_VBN = 64,0,32,0 %;      !  next record pointer (relative)
;  1138  0     macro IRB$B_CACREFLGS = 64,0,8,0 %;     !  cacheflags for calls to getbkt,cache, etc. (indexed)
;  1139  0     macro IRB$B_STOPLEVEL = 65,0,8,0 %;     !  level to stop at on tree search (indexed)
;  1140  0     macro IRB$W_SRCHFLAGS = 66,0,16,0 %;    !  search flags (indexed)
;  1141  0     macro IRB$V_POSINSERT = 66,0,1,0 %;     !  position for insert
;  1142  0     macro IRB$V_SRCHGT = 66,1,1,0 %;        !  approximate search gt
;  1143  0     macro IRB$V_POSDELETE = 66,2,1,0 %;     !  position for delete
;  1144  0     macro IRB$V_NEW_IDX = 66,3,1,0 %;       !  need to read in new idx dsc from file
;  1145  0     macro IRB$V_SRCHGE = 66,4,1,0 %;        !  approximate search ge
;  1146  0     macro IRB$V_NORLS_RNF = 66,5,1,0 %;     !  don't release bkt on rnf error, if set
;  1147  0     macro IRB$V_FIRST_TIM = 66,6,1,0 %;     !  flag to indicate 1st time for seq. processing
;  1148  0     macro IRB$V_PRM = 66,7,1,0 %;           !  flag to indicate that the permanence bit in the bdb
;  1149  0     macro IRB$V_DUP_KEY = 66,8,1,0 %;       !  a duplicate key seen on scan of any data bucket
;  1150  0     macro IRB$V_DEL_SEEN = 66,9,1,0 %;      !  a deleted record has been encountered between current
;  1151  0     macro IRB$V_LAST_GT = 66,10,1,0 %;      !  result of last search of compressed key bucket was GT
;  1152  0     !  and a next record during a $GET/$FIND
;  1153  0     !    should be set
;  1154  0     macro IRB$L_NRP_OFF = 68,0,32,0 %;      !  next record pointer offset (relative)
;  1155  0     macro IRB$L_CURVBN = 68,0,32,0 %;       !  vbn of current record (relative)
;  1156  0     macro IRB$W_NRP_OFF = 68,0,16,0 %;      !  "
;  1157  0     macro IRB$B_SPL_BITS = 68,0,8,0 %;      !  bits for splitting (indexed)
;  1158  0     macro IRB$V_BKT_NO_LO = 68,0,1,0 %;     !  low bit of bucket number processing
;  1159  0     macro IRB$V_NEW_BKTS = 68,1,2,0 %;
;  1160  0     literal IRB$S_NEW_BKTS = 2;             !  number of new buckets (0-3)
;  1161  0     macro IRB$V_REC_W_LO = 68,3,1,0 %;      !  if splitting at pos_insert than rec goes w/ lo
;  1162  0     macro IRB$V_CONT_BKT = 68,4,1,0 %;      !  middle bucket is a continuation bkt
;  1163  0     macro IRB$V_CONT_R = 68,5,1,0 %;        !  right bucket is a continuation bkt
;  1164  0     macro IRB$V_EMPTY_BKT = 68,6,1,0 %;     !  bucket contains no data records
;  1165  0     macro IRB$V_DUPS_SEEN = 68,7,1,0 %;     !  dups seen on scan of bucket, any key
;  1166  0     macro IRB$V_BKT_NO = 68,0,2,0 %;
;  1167  0     literal IRB$S_BKT_NO = 2;
;  1168  0     macro IRB$V_BIG_SPLIT = 68,2,1,0 %;
;  1169  0     macro IRB$V_SPL_IDX = 68,0,1,0 %;       !  split up new index record and swing pointer
;  1170  0     macro IRB$V_EMPT_SEEN = 68,1,1,0 %;     !  empty bucket passed over on posinsert
;  1171  0     macro IRB$L_RP = 72,0,32,0 %;           !  record pointer (relative record !)
;  1172  0     macro IRB$L_RP_VBN = 72,0,32,0 %;       !  record pointer (relative)
;  1173  0     macro IRB$W_POS_INS = 72,0,16,0 %;      !  offset for position for insert for put (indexed)
;  1174  0     macro IRB$W_SPLIT = 74,0,16,0 %;        !  first split point (indexed)
;  1175  0     macro IRB$L_RP_OFF = 76,0,32,0 %;       !  record pointer offset
;  1176  0     macro IRB$L_LST_REC = 76,0,32,0 %;      !  last record address (indexed)
;  1177  0     macro IRB$L_PTR_VBN = 76,0,32,0 %;      !  pointer vbn used by find_by_rrv (indexed)
;  1178  0     macro IRB$W_RP_OFF = 76,0,16,0 %;       !  record pointer offset
;  1179  0     macro IRB$W_SPLIT_1 = 76,0,16,0 %;      !  second split point -- 3-bkt split (indexed)
;  1180  0     macro IRB$W_SPLIT_2 = 78,0,16,0 %;      !  third split point -- 4-bkt split (indexed)
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;  1181  0     macro IRB$L_OWNER_ID = 80,0,32,0 %;      !  owner id used for record locks
;  1182  0     macro IRB$W_OWN_ID = 80,0,16,0 %;        !  index part of process id (pid)
;  1183  0     macro IRB$W_OWN_ISI = 82,0,16,0 %;       !  isi value for this irab
;  1184  0     macro IRB$B_PPF_ISI = 82,0,8,0 %;        !  isi value for this process-permanent irab
;  1185  0     macro IRB$B_BCNT = 84,0,8,0 %;           !  i/o buffer count
;  1186  0     macro IRB$B_MBC = 85,0,8,0 %;            !  multi-block count
;  1187  0     macro IRB$W_RSZ = 86,0,16,0 %;           !  record size from user
;  1188  0     macro IRB$L_RBF = 88,0,32,0 %;           !  user record buffer address
;  1189  0     macro IRB$B_MBF = 92,0,8,0 %;            !  Multi-buffer count from user's RAB
;  1190  0     macro IRB$B_JNLFLG3 = 93,0,8,0 %;        !  IRB journaling flags
;  1191  0     macro IRB$V_VALID_AT = 93,0,1,0 %;       !  IRB MJB contains valid AT entry to write
;  1192  0     !++
;  1193  0     !
;  1194  0     !  start of organization dependent fields
;  1195  0     !
;  1196  0     !--
;  1197  0     !
;  1198  0     !  used by sequential and relative files
;  1199  0     !
;  1200  0     macro IRB$W_CSIZ = 98,0,16,0 %;          !  current record size (seq)
;  1201  0     !++
;  1202  0     !
;  1203  0     !  relative org specific fields
;  1204  0     !
;  1205  0     macro IRB$L_TEMP0 = 100,0,32,0 %;
;  1206  0     macro IRB$W_ROVHDSZ = 100,0,16,0 %;      !  overhead size for record
;  1207  0     macro IRB$B_PRE_CCTL = 100,0,8,0 %;      !  'pre' carriage control
;  1208  0     macro IRB$B_POST_CCTL = 101,0,8,0 %;     !  'post' carriage control
;  1209  0     macro IRB$W_RTOTLSZ = 102,0,16,0 %;      !  total size for record
;  1210  0     macro IRB$L_TEMP1 = 104,0,32,0 %;
;  1211  0     macro IRB$B_NVBNS = 104,0,8,0 %;         !  number of vbns transferred (nxtblk1)
;  1212  0     !
;  1213  0     !  indexed org specific fields
;  1214  0     !
;  1215  0     literal IRB$K_BLN_IDX = 196;
;  1216  0     literal IRB$C_BLN_IDX = 196;
;  1217  0     literal IRB$S_IRBDEF1 = 196;
;  1218  0     macro IRB$L_KEYBUF = 96,0,32,0 %;        !  address of internal key buffer & update buffer
;  1219  0     macro IRB$L_UPDBUF = 100,0,32,0 %;       !  address of internal update buffer
;  1220  0     macro IRB$L_RECBUF = 104,0,32,0 %;       !  address of internal record buffer
;  1221  0     macro IRB$L_OLDBUF = 108,0,32,0 %;       !  address of internal old record buffer (updates only)
;  1222  0     macro IRB$L_RFA_VBN = 112,0,32,0 %;      !  save record vbn for nrp data
;  1223  0     macro IRB$L_UPD_BDB = 112,0,32,0 %;      !  save current bdb during insert operation
;  1224  0     macro IRB$L_LAST_VBN = 112,0,32,0 %;     !  last vbn at data level for update
;  1225  0     macro IRB$W_RFA_ID = 116,0,16,0 %;       !  save record id for search data
;  1226  0     macro IRB$W_LAST_ID = 116,0,16,0 %;      !  id for udr during update (plg 3)
;  1227  0     macro IRB$W_SAVE_POS = 118,0,16,0 %;     !  save duplicate position for nrp data
;  1228  0     macro IRB$L_NEXT_VBN = 120,0,32,0 %;     !  save next user data record VBN for nrp data
;  1229  0     macro IRB$L_PUTUP_VBN = 120,0,32,0 %;    !  RFA VBN of $PUT/$UPDATE record
;  1230  0     macro IPB$L_FIRST_VBN = 124,0,32,0 %;    !  save SIDR first element VBN for search NRP data
;  1231  0     macro IRB$W_NEXT_ID = 128,0,16,0 %;      !  save next user data record ID for nrp data
;  1232  0     macro IRB$W_PUTUP_ID = 128,0,16,0 %;     !  ID of $PUT/$UPDATE record
;  1233  0     macro IRB$W_FIRST_ID = 130,0,16,0 %;     !  save SIDR first element ID for search NRP data
;  1234  0     macro IRB$L_LOCK_BDB = 132,0,32,0 %;     !  lock bdb addr of level below on splits
;  1235  0     macro IRB$L_VBN_LEFT = 136,0,32,0 %;     !  left vbn of split
;  1236  0     macro IRB$L_MIDX_TMP1 = 136,0,32,0 %;    !  temporary one for make index
;  1237  0     macro IRB$L_VBN_RIGHT = 140,0,32,0 %;    !  right vbn of split
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;  1238  0     macro IRB$L_MIDX_TMP2 = 140,0,32,0 %;     !  temporary two for make index
;  1239  0     macro IRB$L_VBN_MID = 144,0,32,0 %;       !  middle vbn of split
;  1240  0     macro IRB$L_MIDX_TMP3 = 144,0,32,0 %;     !  temporary three for make index
;  1241  0     macro IRB$L_NEXT_DOWN = 144,0,32,0 %;     !  used by search_tree
;  1242  0     macro IRB$L_REC_COUNT = 148,0,32,0 %;     !  number of current record in this bucket (plg 3)
;  1243  0     macro IRB$L_LST_NCMP = 152,0,32,0 %;      !  address of last key with zero front compression (plg 3)
;  1244  0     macro IRB$L_SPL_COUNT = 156,0,32,0 %;     !  number of the first record to be moved into new bucket
;  1245  0     !    when splitting indexes and SIDRs
;  1246  0     macro IRB$W_NID_RIGHT = 160,0,16,0 %;     !  Next record ID of the right bucket
;  1247  0     macro IRB$W_NID_MID = 162,0,16,0 %;       !  Next record ID of the middle bucket
;  1248  0     macro IRB$W_RFA_NID = 164,0,16,0 %;       !  Next record ID of the RFA bucket
;  1249  0     macro IRB$B_KEYSZ = 166,0,8,0 %;          !  size of key in keybuffer !2
;  1250  0     macro IRB$L_CUR_VBN = 168,0,32,0 %;       !  VBN of current record (primary/SIDR)
;  1251  0     macro IRB$L_POS_VBN = 172,0,32,0 %;       !  VBN of primary data record for NRP positioning
;  1252  0     macro IRB$L_UDR_VBN = 176,0,32,0 %;       !  VBN of current primary data record
;  1253  0     macro IRB$L_SIDR_VBN = 180,0,32,0 %;      !  SIDR array first element VBN of current record (SIDR)
;  1254  0     macro IRB$W_CUR_ID = 184,0,16,0 %;        !  ID of current record (primary)
;  1255  0     macro IRB$W_POS_ID = 186,0,16,0 %;        !  ID of primary data record for NRP positioning
;  1256  0     macro IRB$W_UDR_ID = 188,0,16,0 %;        !  ID of current primary data record
;  1257  0     macro IRB$W_SIDR_ID = 190,0,16,0 %;       !  SIDR array first element ID of current record (SIDR)
;  1258  0     macro IRB$W_CUR_COUNT = 192,0,16,0 %;     !  SIDR array count of current record (SIDR)
;  1259  0     macro IRB$B_RP_KREF = 194,0,8,0 %;        !  Key of reference by which next record is retrieved
;  1260  0     macro IRB$B_CUR_KREF = 195,0,8,0 %;       !  Key of reference of current record (primary/SIDR)
;  1261  0
;  1262  0     !*** MODULE $ASBDEF ***
;  1263  0     !
;  1264  0     !       ASB field definitions
;  1265  0     !
;  1266  0     !       Asynchronous context block (asb)
;  1267  0     !
;  1268  0     !       There is one asb per irab pointed to by irb$l_asbaddr allocated at
;  1269  0     !       connect and one per ifab which is dynamicaly allocated at stall
;  1270  0     !
;  1271  0     !       The asb$l_arglst is pointed to by the arglst field of the
;  1272  0     !       irab if the irb$v_async bookkeeping bit is set
;  1273  0     !
;  1274  0     !       All of the asb$c_bln_xxx must be longword aligned
;  1275  0     !
;  1276  0     literal ASB$C_BID = 13;                   !  asb id = 13
;  1277  0     literal ASB$K_BLN_FIX = 48;               !  block length of fixed asb
;  1278  0     literal ASB$C_BLN_FIX = 48;               !  block length of fixed asb
;  1279  0     !    regs 4 and 5 are saved on stack
;  1280  0     literal ASB$K_BLN_SEQ = 188;              !  block length for seq org irab operations
;  1281  0     literal ASB$C_BLN_SEQ = 188;              !  block length for seq org irab operations
;  1282  0     literal ASB$K_BLN_REL = 192;              !  block length for rel org irab operations
;  1283  0     literal ASB$C_BLN_REL = 192;              !  block length for rel org irab operations
;  1284  0     literal ASB$K_BLN_FAB = 352;              !  block length for fab-related operations
;  1285  0     literal ASB$C_BLN_FAB = 352;              !  block length for fab-related operations
;  1286  0     literal ASB$K_BLN_IDX = 512;
;  1287  0     literal ASB$C_BLN_IDX = 512;
;  1288  0     literal ASB$S_ASBDEF = 512;
;  1289  0     macro ASB$W_STKLEN = 0,0,16,0 %;          !  save stack length (must be first word in block)
;  1290  0     !    STKLEN = BLN_org - BLN_FIX
;  1291  0     macro ASB$W_STKSIZ = 2,0,16,0 %;          !  size of saved stack in bytes
;  1292  0     macro ASB$B_BID = 8,0,8,0 %;              !  block id
;  1293  0     macro ASB$B_BLN = 9,0,8,0 %;              !  block length in longwords
;  1294  0     macro ASB$L_ARGLST = 12,0,0,0 %;
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;  1295  0      literal ASB$S_ARGLST = 16;                  !  saved argument list on async irab operations
;  1296  0      macro ASB$B_ARGCNT = 12,0,8,0 %;            !  argument count
;  1297  0      !  value will be 0, 1, 2, or 3
;  1298  0      macro ASB$L_FABRAB = 16,0,32,0 %;           !  fab or rab address
;  1299  0      macro ASB$L_ERR = 20,0,32,0 %;              !  err routine addr
;  1300  0      macro ASB$L_SUC = 24,0,32,0 %;              !  suc routine addr
;  1301  0      macro ASB$L_REGS = 28,0,0,0 %;
;  1302  0      literal ASB$S_REGS = 20;                    !  save register area for regs 6, 7, 8, 10 and 11
;  1303  0      macro ASB$L_STK = 48,0,0,0 %;
;  1304  0      literal ASB$S_STK = 140;                    !  saved stack area
;  1305  0
;  1306  0      !*** MODULE $BDBDEF ***
;  1307  0      !
;  1308  0      !           BDB field definitions
;  1309  0      !
;  1310  0      !          buffer descriptor block (bdb)
;  1311  0      !
;  1312  0      !          there is one bdb per i/o buffer
;  1313  0      !          ( the i/o buffers exist in separate pages, page aligned)
;  1314  0      !
;  1315  0      literal BDB$C_BID = 12;                     !  bdb id code
;  1316  0      literal BDB$M_VAL = 1;
;  1317  0      literal BDB$M_DRT = 2;
;  1318  0      literal BDB$M_IOP = 4;
;  1319  0      literal BDB$M_PRM = 8;
;  1320  0      literal BDB$M_NOLOCATE = 16;
;  1321  0      literal BDB$M_WFO = 32;
;  1322  0      literal BDB$M_AST_DCL = 64;
;  1323  0      literal BDB$S_BDBDEF = 80;
;  1324  0      macro BDB$L_FLINK = 0,0,32,0 %;             !  forward link
;  1325  0      macro BDB$L_BLINK = 4,0,32,0 %;             !  backward link
;  1326  0      macro BDB$B_BID = 8,0,8,0 %;                !  block id
;  1327  0      macro BDB$B_BLN = 9,0,8,0 %;                !  block length in longwords
;  1328  0      macro BDB$B_FLGS = 10,0,8,0 %;              !  bdb flags
;  1329  0      macro BDB$V_VAL = 10,0,1,0 %;               !  buffer contents valid
;  1330  0      macro BDB$V_DRT = 10,1,1,0 %;               !  buffer content dirty
;  1331  0      macro BDB$V_IOP = 10,2,1,0 %;               !  buffer has i/o in progress
;  1332  0      macro BDB$V_PRM = 10,3,1,0 %;               !  buffer has permanence factor
;  1333  0      macro BDB$V_NOLOCATE = 10,4,1,0 %;          !  buffer shared - no locate mode
;  1334  0      macro BDB$V_WFO = 10,5,1,0 %;               !  other streams awaiting
;  1335  0      macro BDB$V_AST_DCL = 10,6,1,0 %;           !  ast has been declared for
;  1336  0      !  waiting stream
;  1337  0      !  the releasing of this bdb
;  1338  0      !  (set/cleared by rm$cache)
;  1339  0      macro BDB$B_CACHE_VAL = 11,0,8,0 %;         !  relative value of buffer in cache
;  1340  0      macro BDB$B_VERTYP = 11,0,8,0 %;            !  version type (1 = wild)
;  1341  0      macro BDB$W_USERS = 12,0,16,0 %;            !  number of streams referencing this buffer
;  1342  0      macro BDB$W_BUFF_ID = 14,0,16,0 %;          !  buffer identification number
;  1343  0      macro BDB$L_BLB_PTR = 16,0,32,0 %;          !  pointer to BLB chain for this BDB
;  1344  0      macro BDB$W_NUMB = 20,0,16,0 %;             !  # of bytes of buffer in use
;  1345  0      macro BDB$W_DIRSEQ = 20,0,16,0 %;           !  UCB$W_DIRSEQ at directory read time
;  1346  0      macro BDB$W_SIZE = 22,0,16,0 %;             !  # bytes in buffer
;  1347  0      macro BDB$L_ADDR = 24,0,32,0 %;             !  address of buffer
;  1348  0      macro BDB$L_VBN = 28,0,32,0 %;              !  1st vbn in buffer
;  1349  0      macro BDB$L_VBNSEQNO = 32,0,32,0 %;         !  vbn seq number of validity check vs. bcb copy
;  1350  0      macro BDB$L_LAST = 32,0,32,0 %;             !  address of last directory record
;  1351  0      macro BDB$L_WAIT = 36,0,32,0 %;             !  wait thread (irab addr)
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;  1352  0      !  (for inter-stream intra-
;  1353  0      !   process locking only)
;  1354  0      macro BDB$L_VERCOUNT = 36,0,32,0 %;     !  negative count of version entries scanned
;  1355  0      macro BDB$L_ALLOC_ADDR = 40,0,32,0 %;   !  buffer allocation addr
;  1356  0      macro BDB$W_ALLOC_SIZE = 44,0,16,0 %;   !  buffer allocation size
;  1357  0      macro BDB$L_BI_BDB = 48,0,32,0 %;       !  address of isam/block i/o bi journaling BDB
;  1358  0      macro BDB$L_AI_BDB = 52,0,32,0 %;       !  address of isam/block i/o ai journaling BDB
;  1359  0      macro BDB$T_JNLSEQ = 56,0,0,0 %;
;  1360  0      literal BDB$S_JNLSEQ = 16;              !  Journaling Sequence Number Block
;  1361  0      macro BDB$L_WRI = 72,0,32,0 %;          !  work area
;  1362  0      macro BDB$B_REL_VBN = 72,0,8,0 %;       !  current vbn rel to start of buffer
;  1363  0      macro BDB$B_VAL_VBNS = 73,0,8,0 %;      !  # of valid vbns in buffer
;  1364  0      macro BDB$B_PRE_CCTL = 74,0,8,0 %;      !  unit record carriage control byte ('pre')
;  1365  0      macro BDB$B_POST_CCTL = 75,0,8,0 %;     !  unit record carriage control byte ('post')
;  1366  0      macro BDB$L_CURBUFADR = 76,0,32,0 %;    !  current buffer addr
;  1367  0      literal BDB$K_BLN = 80;                 !  length of bdb block
;  1368  0      literal BDB$C_BLN = 80;                 !  length of bdb block
;  1369  0      literal BDB$S_BDBDEF1 = 80;
;  1370  0      macro BDB$L_IOSB = 72,0,0,0 %;
;  1371  0      literal BDB$S_IOSB = 8;                 !  i/o status block for buffer
;  1372  0      macro BDB$L_VERSION = 72,0,32,0 %;      !  addr of current/next directory version entry
;  1373  0      macro BDB$L_RECORD = 76,0,32,0 %;       !  address of current/next directory record
;  1374  0
;  1375  0      !*** MODULE $GBPBDEF ***
;  1376  0      !
;  1377  0      !       GBPB field definitions
;  1378  0      !
;  1379  0      !       Global Buffer Pointer Block (GBPB)
;  1380  0      !
;  1381  0      !       The GBPB is the process local structure used in conjunction with
;  1382  0      !       shared global i/o buffers.  In order to minimize the impact of
;  1383  0      !       global buffers on existing code, the GBPB is identical to a BDB
;  1384  0      !       in those fields which are referenced outside of the RM$CACHE and
;  1385  0      !       RM$RELEASE routines.
;  1386  0      !
;  1387  0      literal GBPB$C_BID = 21;                !  gbpb id code
;  1388  0      literal GBPB$K_BLN = 40;                !  Length of GBPB block
;  1389  0      literal GBPB$C_BLN = 40;                !  Length of GBPB block
;  1390  0      literal GBPB$S_GBPBDEF = 40;
;  1391  0      macro GBPB$L_FLINK = 0,0,32,0 %;        !  forward link
;  1392  0      macro GBPB$L_BLINK = 4,0,32,0 %;        !  backward link
;  1393  0      macro GBPB$B_BID = 8,0,8,0 %;           !  block id
;  1394  0      macro GBPB$B_BLN = 9,0,8,0 %;           !  block length in longwords
;  1395  0      macro GBPB$B_FLGS = 10,0,8,0 %;         !  gbpb flags (use BDB flgs definitions)
;  1396  0      macro GBPB$B_CACHE_VL = 11,0,8,0 %;     !  relative cache value of this buffer
;  1397  0      macro GBPB$W_USERS = 12,0,16,0 %;       !  number of streams referencing this buffer
;  1398  0      macro GBPB$W_BUFF_ID = 14,0,16,0 %;     !  buffer identification number
;  1399  0      macro GBPB$L_BLB_PTR = 16,0,32,0 %;     !  pointer to BLB chain for this GBPB
;  1400  0      macro GBPB$W_NUMB = 20,0,16,0 %;        !  # of bytes of buffer in use
;  1401  0      macro GBPB$W_SIZE = 22,0,16,0 %;        !  # bytes in buffer
;  1402  0      macro GBPB$L_ADDR = 24,0,32,0 %;        !  address of buffer
;  1403  0      macro GBPB$L_VBN = 28,0,32,0 %;         !  1st vbn in buffer
;  1404  0      macro GBPB$L_VBNSEQNO = 32,0,32,0 %;    !  sequence number field.
;  1405  0      macro GBPB$L_GBD_PTR = 36,0,32,0 %;     !  Pointer to the GBD for this buffer.
;  1406  0
;  1407  0      !*** MODULE $RLBDEF ***
;  1408  0      !
```

```
;  1409  0     !       RLB field definitions
;  1410  0     !
;  1411  0     !       record lock block (rlb)
;  1412  0     !
;  1413  0     !       The rlb describes one locked record for a particular
;  1414  0     !       process-record stream (rab/irab). if the owner field
;  1415  0     !       is 0 then the rlb is available for use. otherwise, it
;  1416  0     !       describes a locked record. note: when owner is 0 the
;  1417  0     !       record rfa fields are zeroed (0).
;  1418  0     !
;  1419  0     !
;  1420  0     !                +-----------------------------------------+
;  1421  0     !       rlb:     !                  link                   !
;  1422  0     !                +--------------------+--------------------+
;  1423  0     !                !                    !       rfa4  id     !
;  1424  0     !                +---------+----------+---------+----------+
;  1425  0     !                !  flags  !reserved  !   bln   !   bid    !
;  1426  0     !                +---------+----------+---------+----------+
;  1427  0     !                !                  rfa0                   !
;  1428  0     !                +-----------------------------------------+
;  1429  0     !                 !                   owner                 !
;  1430  0     !                 +-----------------------------------------+
;  1431  0     !       lksb:     ! Still to be def- !  VMS status code     !
;  1432  0     !                 ! ined status bits !                      !
;  1433  0     !                 +-----------------------------------------+
;  1434  0     !                 !  Lock Id. (Returned for new locks,      !
;  1435  0     !                 !            input for conversions)       !
;  1436  0     !                 +-----------------------------------------+
;  1437  0     !
;  1438  0     literal RLB$M_TIMER_INPROG = 1;
;  1439  0     literal RLB$C_BID = 14;                         !  rlb code
;  1440  0     literal RLB$M_WAIT = 1;
;  1441  0     literal RLB$M_CR = 2;
;  1442  0     literal RLB$M_PW = 4;
;  1443  0     literal RLB$M_PR = 8;
;  1444  0     literal RLB$M_CONV = 16;
;  1445  0     literal RLB$M_LV2 = 32;
;  1446  0     literal RLB$M_FAKE = 64;
;  1447  0     literal RLB$M_TMO = 128;
;  1448  0     literal RLB$K_BLN = 28;                         !  length of rlb
;  1449  0     literal RLB$C_BLN = 28;                         !  length of rlb
;  1450  0     literal RLB$S_RLBDEF = 28;
;  1451  0     macro RLB$L_LNK = 0,0,32,0 %;                   !  link to next rlb
;  1452  0     macro RLB$L_MISC = 4,0,32,0 %;                  !  longword definition to optimize clearing field
;  1453  0     macro RLB$W_FLAGS2 = 4,0,16,0 %;                !  more flag bits
;  1454  0     macro RLB$V_TIMER_INPROG = 4,0,1,0 %;           !  Timer queued.
;  1455  0     macro RLB$W_RFA4 = 6,0,16,0 %;                  !  3'rd word of records rfa
;  1456  0     !  offset for seq f.o. (bits 0:14)
;  1457  0     !  always 0 for rel f.o. (bits 0:14)
;  1458  0     macro RLB$W_ID = 6,0,16,0 %;                    !  id for idx f.o.
;  1459  0     macro RLB$B_BID = 8,0,8,0 %;                    !  block id
;  1460  0     macro RLB$B_BLN = 9,0,8,0 %;                    !  block length in longwords
;  1461  0     macro RLB$B_TMO = 10,0,8,0 %;                   !  propagation of ROP TMO field
;  1462  0     macro RLB$B_FLAGS = 11,0,8,0 %;                 !  various locking flags
;  1463  0     macro RLB$V_WAIT = 11,0,1,0 %;                  !  propagation of ROP WAT bit
;  1464  0     macro RLB$V_CR = 11,1,1,0 %;                    !  defines lock manager mode "concurrent read"
;  1465  0     macro RLB$V_PW = 11,2,1,0 %;                    !  allow reader access to locked record flag
```

```
1466  0     macro RLB$V_PR = 11,2,1,0 %;            !  used to query lock database
1467  0     macro RLB$V_CONV = 11,4,1,0 %;          !  defines lock manager option "convert"
1468  0     macro RLB$V_LV2 = 11,5,1,0 %;           !  sets lock as "level 2" RU consistancy
1469  0     macro RLB$V_FAKE = 11,6,1,0 %;          !  this RLB contains no lock.
1470  0     macro RLB$V_TMO = 11,7,1,0 %;           !  propagation of ROP TMO bit
1471  0     !  indicate "lock for write, allow readers"
1472  0     !  used to query lock database for records
1473  0     macro RLB$L_RFA0 = 12,0,32,0 %;         !  1'st and 2'nd words of record's rfa
1474  0     !  seq f.o. vbn
1475  0     !  rel f.o. relative record number
1476  0     !  idx f.o. start vbn
1477  0     macro RLB$L_OWNER = 16,0,32,0 %;        !  identification of owning stream
1478  0     macro RLB$L_LKSB = 20,0,32,0 %;         !  first longword of lock status block
1479  0     macro RLB$W_STATUS = 20,0,16,0 %;       !  VMS status code
1480  0     macro RLB$W_S_BITS = 22,0,16,0 %;       !  various status bits
1481  0     macro RLB$L_LOCK_ID = 24,0,32,0 %;      !  second longword of lksb is lock_id
1482  0
1483  0     !*** MODULE $FLBDEF ***
1484  0     !
1485  0     !   file lock block definitions
1486  0     !
1487  0     literal FLB$C_BID = 23;
1488  0     literal FLB$K_BLN = 20;
1489  0     literal FLB$C_BLN = 20;
1490  0     literal FLB$$_FLBDEF = 20;
1491  0     macro FLB$L_FLB_LNK = 0,0,32,0 %;       !  pointer to next FLB
1492  0     macro FLB$L_RLB_LNK = 4,0,32,0 %;       !  pointer to RLBs
1493  0     macro FLB$B_BID = 8,0,8,0 %;            !  block id
1494  0     macro FLB$B_BLN = 9,0,8,0 %;            !  block length
1495  0     macro FLB$L_IFB_PTR = 12,0,32,0 %;      !  IFAB address
1496  0     macro FLB$L_LOCK_ID = 16,0,32,0 %;      !  lock id
1497  0
1498  0     !*** MODULE $DRCDEF ***
1499  0     !
1500  0     !   directory cache node definitions
1501  0     !
1502  0     literal DRC$K_BLN = 62;                 !  length of directory cache node
1503  0     literal DRC$C_BLN = 62;                 !  length of directory cache node
1504  0     literal DRC$$_DRCDEF = 62;
1505  0     macro DRC$L_NXTFLNK = 0,0,32,0 %;       !  link to next entry, this level
1506  0     macro DRC$L_NXTBLNK = 4,0,32,0 %;       !  link to previous entry, this level
1507  0     macro DRC$L_LVLFLNK = 8,0,32,0 %;       !  link to first entry, next lower level
1508  0     macro DRC$L_LVLBLNK = 12,0,32,0 %;      !  link to last entry, next lower level
1509  0     !  note: the links are maintained in lru order
1510  0     macro DRC$T_NAME = 16,0,0,0 %;
1511  0     literal DRC$S_NAME = 40;                !  directory name or device and unit
1512  0     !  note: stored as counted string counting count itself
1513  0     macro DRC$W_DID = 56,0,0,0 %;
1514  0     literal DRC$S_DID = 6;                  !  file id for directory
1515  0     macro DRC$W_DIRSEQ = 58,0,16,0 %;       !  directory sequence ! for device node
1516  0
1517  0     !*** MODULE $RLSDEF ***
1518  0     !
1519  0     !                   release option flag definitions
1520  0     !
1521  0     literal RLS$M_RETURN = 1;
1522  0     literal RLS$M_WRT_THRU = 2;
```

```
;  1523  0      literal RLS$M_KEEP_LOCK = 4;
;  1524  0      literal RLS$M_DEQ = 8;
;  1525  0      literal RLS$S_RLSDEF = 1;
;  1526  0      macro RLS$V_RETURN = 0,0,1,0 %;          !  return buffer and bdb to free space lists
;  1527  0      macro RLS$V_WRT_THRU = 0,1,1,0 %;        !  write buffer if dirty
;  1528  0      macro RLS$V_KEEP_LOCK = 0,2,1,0 %;       !  keep bdb locked
;  1529  0      macro RLS$V_DEQ = 0,3,1,0 %;             !  always release lock
;  1530  0
;  1531  0      !*** MODULE $CSHDEF ***
;  1532  0      !
;  1533  0      !                       cache option flag definitions
;  1534  0      !
;  1535  0      literal CSH$M_LOCK = 1;
;  1536  0      literal CSH$M_NOWAIT = 2;
;  1537  0      literal CSH$M_NOREAD = 4;
;  1538  0      literal CSH$M_NOBUFFER = 8;
;  1539  0      literal CSH$S_CSHDEF = 1;
;  1540  0      macro CSH$V_LOCK = 0,0,1,0 %;            !  obtain exclusive access to block
;  1541  0      macro CSH$V_NOWAIT = 0,1,1,0 %;          !  do not wait for block on access interlock
;  1542  0      macro CSH$V_NOREAD = 0,2,1,0 %;          !  do not read in block
;  1543  0      macro CSH$V_NOBUFFER = 0,3,1,0 %;        !  obtain access to block but don't allocate
;  1544  0      !  a buffer for it and don't read it
;  1545  0      !  collision
;  1546  0
;  1547  0      !*** MODULE $PIODEF ***
;  1548  0      !
;  1549  0      !
;  1550  0      !    rms overall status bit definitions
;  1551  0      !
;  1552  0      literal PIO$S_PIODEF = 1;
;  1553  0      macro PIO$V_INHAST = 0,0,1,0 %;          !  set if asts implicitly inhibited
;  1554  0      !  if reset by disabled ast, ast must be re-
;  1555  0      !  enabled
;  1556  0      macro PIO$V_EOD = 0,1,1,0 %;             !  set if searching for 'eod' string on 'input'
;  1557  0      macro PIO$V_SYNC1 = 0,2,1,0 %;           !  sync stalled operation using efn 27
;  1558  0      macro PIO$V_SYNC2 = 0,3,1,0 %;           !  sync stalled operation using efn 28
;  1559  0
;  1560  0      !*** MODULE $FTLDEF ***
;  1561  0      !
;  1562  0      !          definitions for rms debug failure codes
;  1563  0      !
;  1564  0      !
;  1565  0      !    the following codes are for temporary bug check tests, and are
;  1566  0      !    internal to rms.  all of the codes are negative, implying that they
;  1567  0      !    do not return to the caller, probably killing the process (if not
;  1568  0      !    the entire system).
;  1569  0      !
;  1570  0      literal FTL$_SETPRTFAIL = -1;            !  set protection system service failed (rm0bufmgr)
;  1571  0      literal FTL$_STKTOOBIG = -2;             !  stack too big for asb (rm0stall)
;  1572  0      literal FTL$_BADIFAB = -3;               !  invalid ifab or irab (rm0fset,rm0conn,rm0rset,rm0prflnm)
;  1573  0      literal FTL$_GTCHNFAIL = -4;             !  get channel system service failure (rm0prflnm)
;  1574  0      literal FTL$_BADORGCASE = -5;            !  invalid orgcase value for dispatch (all rms$
;  1575  0      !  level routines execept open and create)
;  1576  0      literal FTL$_BADBDB = -6;                !  block not a bdb (rm0bufmgr)
;  1577  0      literal FTL$_ASBALLFAIL = -7;            !  couldn't allocate an asb (rm0stall)
;  1578  0      literal FTL$_BADASTPRM = -8;             !  ast parameter not a valid ifab/irab addr (rm0stall)
;  1579  0      literal FTL$_CANTDOAST = -9;             !  couldn't redeclare ast (insf. mem.) (rm0stall)
```

```
;  1580  0     literal FTL$_NOSTRUCT = -10;             !  rab or fab not same on ast (rm0stall)
;  1581  0     literal FTL$_NOASB = -11;                !  asb not allocated or stream not busy on ast (rm0stall)
;  1582  0     literal FTL$_NONXTBDB = -12;             !  no next bdb available (rm1seqxfr)
;  1583  0     literal FTL$_BADBUFSIZ = -13;            !  disk buffer size not = 512 (rm1conn)
;  1584  0     literal FTL$_ENQDEQFAIL = -14;           !  enq or deq service failed (rm0reclck)
;  1585  0     literal FTL$_NOCURBDB = -15;             !  no current bdb before calling rm$release (rm0reclck)
;  1586  0     literal FTL$_NOPARENT = -16;             !  no parent lock available for global buffer section lock (rm0share)
;  1587  0     literal FTL$_DEALLERR = -17;             !  ifab deallocation attempted with other block(s)
;  1588  0     !  still allocated (rms0close)
;  1589  0     literal FTL$_IORNDN = -18;               !  i/o rundown inconsistency (either ifab or irab
;  1590  0     !  table entries not zeroed) (rms0rndwn)
;  1591  0     literal FTL$_XFERSIZE = -19;             !  size of requested transfer not equal to
;  1592  0     !  or less than the current number of bytes
;  1593  0     !  in use for the bdb (rm0cache)
;  1594  0     literal FTL$_NOTLOCKED = -20;            !  bdb not locked and a keep lock request
;  1595  0     !  was made on a release request.
;  1596  0     literal FTL$_NODIDORFID = -21;           !  neither a fid nor a did was set upon exit from
;  1597  0     !  rm$setdid (rms0erase)
;  1598  0     literal FTL$_RELEASFAIL = -22;           !  release of non-dirty bdb failed (rm0xtnd23,rms0extend)
;  1599  0     literal FTL$_NOLOCKBDB = -23;            !  no lock bdb found (rm0xtnd23)
;  1600  0     literal FTL$_NONETWORK = -24;            !  network routine entered but no network support in rms
;  1601  0     literal FTL$_LOCKFAILED = -25;           !  failed to lock prolog (rm2create)
;  1602  0     literal FTL$_BADLEVEL = -26;             !  to search by id, structure level must be 0
;  1603  0     literal FTL$_ASTDECERR = -27;            !  ast declaration for file sharing failed
;  1604  0     literal FTL$_BADGBLCNT = -28;            !  Zero global buffer count found when not expected (rm1conn)
;  1605  0     literal FTL$_ACCNTOVFLO = -29;           !  access count overflow (rm0share)
;  1606  0     literal FTL$_BDBAVAIL = -30;             !  BDB was available and shouldn't have been.
;  1607  0     literal FTL$_GBLNOLK = -31;              !  Record locking was not set with global buffers.
;  1608  0     literal FTL$_LCKFND = -32;               !  A lock was found and we don't know what to do.
;  1609  0     literal FTL$_NOBLB = -33;                !  No BLB was found and there should have been one.
;  1610  0     literal FTL$_NOGBPB = -34;               !  No GBPB was found and should have been.
;  1611  0     literal FTL$_NOLCLBUF = -35;             !  Should have found a local buffer.
;  1612  0     literal FTL$_NORDNOTSET = -36;           !  NOREAD not set when NOBUFFER was.
;  1613  0     literal FTL$_NOTGBPB = -37;              !  Found an illegit BDB.
;  1614  0     literal FTL$_NOSFSB = -38;               !  No SFSB when allocating BLB.
;  1615  0     literal FTL$_LOCKHELD = -39;             !  Attempted to return a BLB with lock_id neq 0
;  1616  0     literal FTL$_RLSDRT = -40;               !  Dirty buffer found in releasall.
;  1617  0     literal FTL$_BADBLB = -41;               !  Bad BLB found in blocking AST routine.
;  1618  0     literal FTL$_BADOWNER = -42;             !  Owner field in BLB is bad in blocking AST routine.
;  1619  0     literal FTL$_GETLKIFAIL = -43;           !  $GETLKIW failed in last chance (rms0lstch).
;  1620  0     literal FTL$_BADEBKHBK = -44;            !  tried to store an invalid EBK/HBK (rm0share).
;  1621  0
;  1622  0     !*** MODULE $BUGDEF ***
;  1623  0     !
;  1624  0     !    the following internal codes are for non-fatal bug check reporting.
;  1625  0     !    these codes are positive byte values.  they trigger a reporting action
;  1626  0     !    and return to the caller with r0 set to rms$_bug+<8*the bug code>,
;  1627  0     !    which is an externally documented rms error code.
;  1628  0     !
;  1629  0     literal BUG$_BADDFLTDIR = 1;             ! DEFAULT DIRECTORY STRING INVALID (RM0XPFN)
;  1630  0
;  1631  0     !*** MODULE $IDXDEF ***
;  1632  0     !
;  1633  0     !          IDX field definitions
;  1634  0     !
;  1635  0     !          index descriptor definition
;  1636  0     !
```

```
;  1637  0     !          An index descriptor block exists for each key of reference in use.
;  1638  0     !          they are not necessarily contiguous in memory.
;  1639  0     !
;  1640  0     literal IDX$C_BID = 15;                 !  id for index descriptor block
;  1641  0     literal IDX$M_DUPKEYS = 1;
;  1642  0     literal IDX$M_CHGKEYS = 2;
;  1643  0     literal IDX$M_NULKEYS = 4;
;  1644  0     literal IDX$M_IDX_COMPR = 8;
;  1645  0     literal IDX$M_INITIDX = 16;
;  1646  0     literal IDX$M_KEY_COMPR = 64;
;  1647  0     literal IDX$M_REC_COMPR = 128;
;  1648  0     literal IDX$C_STRING = 0;                !  string data type
;  1649  0     literal IDX$C_SGNWORD = 1;               !  signed binary word
;  1650  0     literal IDX$C_UNSGNWORD = 2;             !  unsigned binary word
;  1651  0     literal IDX$C_SGNLONG = 3;               !  signed binary long word
;  1652  0     literal IDX$C_UNSGNLONG = 4;             !  unsigned binary long word
;  1653  0     literal IDX$C_PACKED = 5;                !  packed decimal
;  1654  0     literal IDX$C_SGNQUAD = 6;               !  signed binary quadword
;  1655  0     literal IDX$C_UNSGNQUAD = 7;             !  unsigned binary quadword
;  1656  0     literal IDX$C_V2_BKT = 0;                !  Prologue two bucket
;  1657  0     literal IDX$C_CMPIDX = 1;                !  Prologue 3, index keys are compressed
;  1658  0     literal IDX$C_NCMPIDX = 2;               !  Prologue 3, index keys are not compressed
;  1659  0     literal IDX$C_CMPCMP = 3;                !  Prologue 3, primary key is compressed, data
;  1660  0     !    is compressed
;  1661  0     !  Prologue 3, SIDR key is compressed
;  1662  0     literal IDX$C_CMPNCMP = 4;               !  Prologue 3, primary key is compressed,
;  1663  0     !    data is not compressed
;  1664  0     literal IDX$C_NCMPCMP = 5;               !  Prologue 3, primary key is not compressed
;  1665  0     !    data is compressed
;  1666  0     literal IDX$C_NCMPNCMP = 6;              !  Prologue 3, primary key is not compressed
;  1667  0     !    data is not compressed
;  1668  0     !  Prologue 3, SIDR key is compressed
;  1669  0     literal IDX$K_FIXED_BLN = 44;
;  1670  0     literal IDX$C_FIXED_BLN = 44;
;  1671  0     !
;  1672  0     !  the following is the length of the fixed part of the index descriptor
;  1673  0     !
;  1674  0     !
;  1675  0     !  the following is repeated for each key segment
;  1676  0     !
;  1677  0     literal IDX$S_IDXDEF = 48;
;  1678  0     macro IDX$L_IDXFL = 0,0,32,0 %;          !  forward link to next index descriptor
;  1679  0     macro IDX$B_BID = 8,0,8,0 %;             !  block id
;  1680  0     macro IDX$B_BLN = 9,0,8,0 %;             !  length of block
;  1681  0     macro IDX$L_VBN = 10,0,32,0 %;           !  VBN where the descriptor came from
;  1682  0     macro IDX$W_OFFSET = 14,0,16,0 %;        !  Offset into the block (VBN) of the descriptor
;  1683  0     macro IDX$B_DESC_NO = 16,0,8,0 %;        !  Descriptor number (index into update buffer)
;  1684  0     macro IDX$B_IANUM = 18,0,8,0 %;          !  area number for index buckets
;  1685  0     macro IDX$B_LANUM = 19,0,8,0 %;          !  area number for lower index buckets
;  1686  0     macro IDX$B_DANUM = 20,0,8,0 %;          !  area number for data buckets
;  1687  0     macro IDX$B_ROOTLEV = 21,0,8,0 %;        !  level of root
;  1688  0     macro IDX$B_IDXBKTSZ = 22,0,8,0 %;       !  size of index bucket in vbn's
;  1689  0     macro IDX$B_DATBKTSZ = 23,0,8,0 %;       !  size of data bucket in vbn's
;  1690  0     macro IDX$L_ROOTVBN = 24,0,32,0 %;       !  start vbn of root bucket
;  1691  0     macro IDX$B_FLAGS = 28,0,8,0 %;          !  index/key flags
;  1692  0     macro IDX$V_DUPKEYS = 28,0,1,0 %;        !  duplicate keys allowed
;  1693  0     macro IDX$V_CHGKEYS = 28,1,1,0 %;        !  keys can change values
```

```
;  1694  0      macro IDX$V_NULKEYS = 28,2,1,0 %;          !  null key value allowed
;  1695  0      macro IDX$V_IDX_COMPR = 28,3,1,0 %;        !  index is compressed
;  1696  0      macro IDX$V_INITIDX = 28,4,1,0 %;          !  index is not initialized
;  1697  0      macro IDX$V_KEY_COMPR = 28,6,1,0 %;        !  key has been compressed
;  1698  0      macro IDX$V_REC_COMPR = 28,7,1,0 %;        !  data record is in compressed form
;  1699  0      macro IDX$B_DATATYPE = 29,0,8,0 %;         !  data type of key field
;  1700  0      macro IDX$B_SEGMENTS = 30,0,8,0 %;         !  number of key field segments
;  1701  0      macro IDX$B_NULLCHAR = 31,0,8,0 %;         !  null character
;  1702  0      macro IDX$B_KEYSZ = 32,0,8,0 %;            !  total key size
;  1703  0      macro IDX$B_KEYREF = 33,0,8,0 %;           !  key of reference(0-primary)
;  1704  0      macro IDX$W_MINRECSZ = 34,0,16,0 %;        !  minimum record size
;  1705  0      macro IDX$W_IDXFILL = 36,0,16,0 %;         !  index fill
;  1706  0      macro IDX$W_DATFILL = 38,0,16,0 %;         !  data fill
;  1707  0      macro IDX$B_IDXBKTYP = 40,0,8,0 %;         !  PLG3 - type of index bucket and SIDR bucket
;  1708  0      macro IDX$B_DATBKTYP = 41,0,8,0 %;         !  PLG3 - type of primary data bucket
;  1709  0      macro IDX$W_POSITION = 44,0,16,0 %;        !  key segment position
;  1710  0      macro IDX$B_SIZE = 46,0,8,0 %;             !  key segment size (plg 3)
;  1711  0      macro IDX$B_TYPE = 47,0,8,0 %;             !  key segment datatype (plg 3)
;  1712  0
;  1713  0      !*** MODULE $UPDDEF ***
;  1714  0      !
;  1715  0      !  update buffer flags
;  1716  0      !
;  1717  0      literal UPD$M_INS_NEW = 1;
;  1718  0      literal UPD$M_OLD_DEL = 2;
;  1719  0      literal UPD$S_UPDDEF = 1;
;  1720  0      macro UPD$B_FLAGS = 0,0,8,0 %;
;  1721  0      macro UPD$V_INS_NEW = 0,0,1,0 %;           !  alternate key to be inserted from record buffer
;  1722  0      macro UPD$V_OLD_DEL = 0,1,1,0 %;           !  delete this key value using old record
;  1723  0
;  1724  0      !*** MODULE $GBHDEF ***
;  1725  0      !
;  1726  0      !          GBH field definitions
;  1727  0      !
;  1728  0      !          Global Buffer Header (GBH)
;  1729  0      !
;  1730  0      !          There is a Global Buffer Header for every file's global buffer section.
;  1731  0      !
;  1732  0      !          ***  WARNING - THIS STRUCTURE MUST BE QUADWORD ALIGNED  ***
;  1733  0      !
;  1734  0      literal GBH$C_BID = 17;                    !  Block ID code for GBH
;  1735  0      literal GBH$M_CACHE_IN = 1;
;  1736  0      literal GBH$M_CACHE_OUT = 2;
;  1737  0      literal GBH$M_RLS_IN = 4;
;  1738  0      literal GBH$M_RLS_OUT = 8;
;  1739  0      literal GBH$M_QIO_START = 16;
;  1740  0      literal GBH$M_QIO_DONE = 32;
;  1741  0      literal GBH$M_STALL = 64;
;  1742  0      literal GBH$M_THREADGO = 128;
;  1743  0      literal GBH$M_BLB_ENQ = 256;
;  1744  0      literal GBH$M_BLB_GRANT = 512;
;  1745  0      literal GBH$M_BLB_DEQ = 1024;
;  1746  0      literal GBH$M_BLB_BLOCK = 2048;
;  1747  0      literal GBH$M_F1 = 4096;
;  1748  0      literal GBH$M_F2 = 8192;
;  1749  0      literal GBH$M_F3 = 16384;
;  1750  0      literal GBH$M_F4 = 32768;
```

```
;  1751  0     literal GBH$K_BLN = 88;                  ! Length of global buffer header structure
;  1752  0     literal GBH$C_BLN = 88;                  ! Length of global buffer header structure
;  1753  0     literal GBH$S_GBHDEF = 88;
;  1754  0     macro GBH$L_GBD_FLNK = 0,0,32,0 %;       ! Self relative queue header for GBD's
;  1755  0     macro GBH$L_GBD_BLNK = 4,0,32,0 %;
;  1756  0     macro GBH$B_BID = 8,0,8,0 %;             ! Block ID
;  1757  0     macro GBH$B_BLN = 9,0,8,0 %;             ! Length of GBH in longwords
;  1758  0     macro GBH$W_TRC_FLGS = 10,0,16,0 %;      ! Trace flags (set to trace given function)
;  1759  0     macro GBH$V_CACHE_IN = 10,0,1,0 %;       ! Cache inputs
;  1760  0     macro GBH$V_CACHE_OUT = 10,1,1,0 %;      ! Cache outputs
;  1761  0     macro GBH$V_RLS_IN = 10,2,1,0 %;         ! Release inputs
;  1762  0     macro GBH$V_RLS_OUT = 10,3,1,0 %;        ! Release outputs
;  1763  0     macro GBH$V_QIO_START = 10,4,1,0 %;      ! Qio inputs
;  1764  0     macro GBH$V_QIO_DONE = 10,5,1,0 %;       ! Qio outputs
;  1765  0     macro GBH$V_STALL = 10,6,1,0 %;          ! Stall inputs
;  1766  0     macro GBH$V_THREADGO = 10,7,1,0 %;       ! Stall outputs
;  1767  0     macro GBH$V_BLB_ENQ = 10,8,1,0 %;        ! Bucket lock ENQ inputs
;  1768  0     macro GBH$V_BLB_GRANT = 10,9,1,0 %;      ! Bucket lock grant status
;  1769  0     macro GBH$V_BLB_DEQ = 10,10,1,0 %;       ! Bucket lock DEQ request
;  1770  0     macro GBH$V_BLB_BLOCK = 10,11,1,0 %;     ! Blocking AST received
;  1771  0     macro GBH$V_F1 = 10,12,1,0 %;
;  1772  0     macro GBH$V_F2 = 10,13,1,0 %;
;  1773  0     macro GBH$V_F3 = 10,14,1,0 %;
;  1774  0     macro GBH$V_F4 = 10,15,1,0 %;
;  1775  0     macro GBH$L_HI_VBN = 12,0,32,0 %;        ! Highest possible VBN value (FFFFFFFF).
;  1776  0     macro GBH$L_GS_SIZE = 16,0,32,0 %;       ! Size of total section in bytes.
;  1777  0     macro GBH$L_LOCK_ID = 20,0,32,0 %;       ! Lock ID of system file lock.
;  1778  0     macro GBH$L_GS_LOCK_ID = 24,0,32,0 %;    ! Lock ID of system global section lock.
;  1779  0     macro GBH$L_USECNT = 28,0,32,0 %;        ! Accessor count for section.
;  1780  0     macro GBH$L_TRC_FLNK = 32,0,32,0 %;      ! Trace blocks forward link
;  1781  0     macro GBH$L_TRC_BLNK = 36,0,32,0 %;      ! Trace blocks back link
;  1782  0     macro GBH$L_GBD_START = 40,0,32,0 %;     ! Offset to first GBD.
;  1783  0     macro GBH$L_GBD_END = 44,0,32,0 %;       ! Offset to last GBD.
;  1784  0     macro GBH$L_GBD_NEXT = 48,0,32,0 %;      ! Offset to next cache victim GBD.
;  1785  0     macro GBH$L_SCAN_NUM = 52,0,32,0 %;      ! Number of GBD's to scan for victim.
;  1786  0     !
;  1787  0     !  Global buffer statistics section
;  1788  0     !
;  1789  0     macro GBH$L_HIT = 56,0,32,0 %;           ! Buffer found in global cache
;  1790  0     macro GBH$L_MISS = 60,0,32,0 %;          ! Buffer not found in global cache
;  1791  0     macro GBH$L_READ = 64,0,32,0 %;          ! Buffer read from disk into cache
;  1792  0     macro GBH$L_WRITE = 68,0,32,0 %;         ! Buffer written from cache to disk
;  1793  0     macro GBH$L_DFW_WRITE = 72,0,32,0 %;     ! Deferred writeback from cache to disk
;  1794  0     macro GBH$L_CROSS_HIT = 76,0,32,0 %;     ! Cross process hit count.
;  1795  0     macro GBH$L_OUTBUFQUO = 80,0,32,0 %;     ! Count of times GBLBUFQUO limit was hit.
;  1796  0     macro GBH$L_FILL_1 = 84,0,32,0 %;        ! Force quadword alignment
;  1797  0
;  1798  0     !*** MODULE $TRCDEF ***
;  1799  0     !
;  1800  0     !          TRC field definitions
;  1801  0     !
;  1802  0     !          Trace block structure (TRC)
;  1803  0     !
;  1804  0     !          Tracing saves at specific points in the RMS code for debugging and
;  1805  0     !          algorithm analysis purposes.
;  1806  0     !
;  1807  0     !          ***  WARNING - THIS STRUCTURE MUST BE QUADWORD ALIGNED  ***
```

```
;  1808  0     !
;  1809  0     literal TRC$C_BID = 18;                 !  Trace block code
;  1810  0     literal TRC$K_BLN = 64;                 !  NOTE: should be quadwords multiple to
;  1811  0     literal TRC$C_BLN = 64;                 !  NOTE: should be quadwords multiple to
;  1812  0     literal TRC$S_TRCDEF = 64;
;  1813  0     macro TRC$L_FLNK = 0,0,32,0 %;          !  Trace block forward link
;  1814  0     macro TRC$L_BLNK = 4,0,32,0 %;          !  Trace block back link
;  1815  0     macro TRC$B_BID = 8,0,8,0 %;            !  Block ID
;  1816  0     macro TRC$B_BLN = 9,0,8,0 %;            !  Length of block in longwords
;  1817  0     macro TRC$W_FUNCTION = 10,0,16,0 %;     !  Function code (see GBH definitions)
;  1818  0     macro TRC$L_STRUCTURE = 12,0,32,0 %;    !  Ifab/irab address.
;  1819  0     macro TRC$W_PID = 16,0,16,0 %;          !  Process ID
;  1820  0     macro TRC$W_SEQNUM = 18,0,16,0 %;       !  Sequence number.
;  1821  0     macro TRC$L_VBN = 20,0,32,0 %;          !  VBN requested.
;  1822  0     macro TRC$L_RETURN1 = 24,0,32,0 %;      !  Address of caller.
;  1823  0     macro TRC$L_RETURN2 = 28,0,32,0 %;      !  Caller's caller.
;  1824  0     macro TRC$L_ARGS = 32,0,0,0 %;
;  1825  0     literal TRC$S_ARGS = 32;                !  Function specific arguments
;  1826  0     macro TRC$L_ARG_FLG = 32,0,32,0 %;      !  Argument flags (R3).
;  1827  0     macro TRC$L_BDB_ADDR = 36,0,32,0 %;     !  BDB address.
;  1828  0     macro TRC$W_BDB_USERS = 40,0,16,0 %;    !  Use count from BDB.
;  1829  0     macro TRC$W_BDB_BUFF = 42,0,16,0 %;     !  BDB buffer ID.
;  1830  0     macro TRC$B_BDB_CACHE = 44,0,8,0 %;     !  BDB cache value.
;  1831  0     macro TRC$B_BDB_FLAGS = 45,0,8,0 %;     !  Status flags from BDB.
;  1832  0     macro TRC$L_BDB_SEQ = 46,0,32,0 %;      !  Sequence number from BDB.
;  1833  0     macro TRC$B_BLB_MODE = 50,0,8,0 %;      !  Mode held in BLB.
;  1834  0     macro TRC$B_BLB_FLAGS = 51,0,8,0 %;     !  Flags from BLB.
;  1835  0     macro TRC$L_BLB_ADDR = 52,0,32,0 %;     !  Address of BLB.
;  1836  0     macro TRC$L_BLB_LOCK = 56,0,32,0 %;     !  Lock ID from BLB.
;  1837  0     macro TRC$L_BLB_SEQ = 60,0,32,0 %;      !  Sequence number from BLB.
;  1838  0     !  maintain quad alignment on header
;  1839  0
;  1840  0     !*** MODULE $GBDDEF ***
;  1841  0     !
;  1842  0     !       GBD structure definitions
;  1843  0     !
;  1844  0     !       Global Buffer Descriptor (GBD)
;  1845  0     !
;  1846  0     !       There is a single GBD for every buffer in a global buffer
;  1847  0     !       section (used only with shared files).  The GBD's themselves
;  1848  0     !       are in the section also and linked from a queue header in
;  1849  0     !       the Global Buffer Header (GBH).
;  1850  0     !
;  1851  0     !       ***  WARNING - THIS STRUCTURE MUST BE QUADWORD ALIGNED  ***
;  1852  0     !
;  1853  0     literal GBD$C_BID = 19;                 !  Block ID code for GBD
;  1854  0     literal GBD$M_VALID = 1;
;  1855  0     literal GBD$K_BLN = 40;                 !  Length of Global Buffer Descriptor structure.
;  1856  0     literal GBD$C_BLN = 40;                 !  Length of Global Buffer Descriptor structure.
;  1857  0     literal GBD$S_GBDDEF = 40;
;  1858  0     macro GBD$L_FLINK = 0,0,32,0 %;         !  Forward link - Note: This is a self relative queue
;  1859  0     macro GBD$L_BLINK = 4,0,32,0 %;         !  Back link
;  1860  0     macro GBD$B_BID = 8,0,8,0 %;            !  Block ID
;  1861  0     macro GBD$B_BLN = 9,0,8,0 %;            !  Block length of GBD
;  1862  0     macro GBD$B_FLAGS = 10,0,8,0 %;         !  Buffer status flags
;  1863  0     macro GBD$V_VALID = 10,0,1,0 %;         !  Buffer is valid.
;  1864  0     macro GBD$B_CACHE_VAL = 11,0,8,0 %;     !  Cache value of this bucket
```

```
;  1865  0      macro GBD$L_VBN = 12,0,32,0 %;          !  VBN of bucket the buffer describes
;  1866  0      macro GBD$L_VBNSEQNUM = 16,0,32,0 %;    !  VBN sequence number validity check
;  1867  0      macro GBD$L_LOCK_ID = 20,0,32,0 %;      !  Lock ID of system lock.
;  1868  0      macro GBD$W_NUMB = 24,0,16,0 %;         !  Number of bytes in use
;  1869  0      macro GBD$W_SIZE = 26,0,16,0 %;         !  Size of buffer in bytes
;  1870  0      macro GBD$L_REL_ADDR = 28,0,32,0 %;     !  Address of buffer relative to GBH
;  1871  0      macro GBD$W_USECNT = 32,0,16,0 %;       !  Accessor count for bucket
;  1872  0      macro GBD$B_REHIT_RD = 34,0,8,0 %;      !  Rehit by same process count.
;  1873  0      macro GBD$B_REHIT_LK = 35,0,8,0 %;      !  Rehit by same locker process.
;  1874  0
;  1875  0      !*** MODULE $BLBDEF ***
;  1876  0      !
;  1877  0      !       BLB field definitions
;  1878  0      !
;  1879  0      !       Bucket Lock Block (BLB)
;  1880  0      !
;  1881  0      !       The BLB contains the argument list for the SYS$ENQ system service
;  1882  0      !       as well a pointer to the BDB it relates to and other status.
;  1883  0      !
;  1884  0      literal BLB$C_BID = 16;                 !  BLB code
;  1885  0      literal BLB$M_LOCK = 1;
;  1886  0      literal BLB$M_NOWAIT = 2;
;  1887  0      literal BLB$M_NOREAD = 4;
;  1888  0      literal BLB$M_NOBUFFER = 8;
;  1889  0      literal BLB$M_IOLOCK = 16;
;  1890  0      literal BLB$M_DFW = 32;
;  1891  0      literal BLB$M_WRITEBACK = 64;
;  1892  0      literal BLB$K_BLN = 56;                 !  Length of BLB
;  1893  0      literal BLB$C_BLN = 56;                 !  Length of BLB
;  1894  0      literal BLB$S_BLBDEF = 56;
;  1895  0      macro BLB$L_FLNK = 0,0,32,0 %;          !  Link to next BLB
;  1896  0      macro BLB$L_BLNK = 4,0,32,0 %;          !  Back link
;  1897  0      macro BLB$B_BID = 8,0,8,0 %;            !  Block ID
;  1898  0      macro BLB$B_BLN = 9,0,8,0 %;            !  Block length
;  1899  0      macro BLB$B_BLBFLGS = 10,0,8,0 %;       !  Control flags for BLB
;  1900  0      macro BLB$V_LOCK = 10,0,1,0 %;          !  Corresponds to CSH$V_LOCK
;  1901  0      macro BLB$V_NOWAIT = 10,1,1,0 %;        !  Same as CSH$V_NOWAIT
;  1902  0      macro BLB$V_NOREAD = 10,2,1,0 %;        !  Same as CSH$V_NOREAD
;  1903  0      macro BLB$V_NOBUFFER = 10,3,1,0 %;      !  Same as CSH$V_NOBUFFER
;  1904  0      macro BLB$V_IOLOCK = 10,4,1,0 %;        !  Lock mode for read/write
;  1905  0      macro BLB$V_DFW = 10,5,1,0 %;           !  This is lock for deferred write buffer
;  1906  0      macro BLB$V_WRITEBACK = 10,6,1,0 %;     !  The associated buffer must be written back
;  1907  0      macro BLB$B_MODEHELD = 11,0,8,0 %;      !  Mode of current lock held.
;  1908  0      macro BLB$L_BDB_ADDR = 12,0,32,0 %;     !  BDB for which this lock is held
;  1909  0      macro BLB$L_OWNER = 16,0,32,0 %;        !  Address of stream owning this lock
;  1910  0      macro BLB$L_VBN = 20,0,32,0 %;          !  VBN of bucket lock (resource name)
;  1911  0      macro BLB$L_RESDSC = 24,0,0,0 %;
;  1912  0      literal BLB$S_RESDSC = 8;               !  Resource name descriptor
;  1913  0      macro BLB$W_LKSTS = 32,0,16,0 %;        !  Lock status word
;  1914  0      macro BLB$L_LOCK_ID = 36,0,32,0 %;      !  Lock ID
;  1915  0      macro BLB$L_VALBLK = 40,0,0,0 %;
;  1916  0      literal BLB$S_VALBLK = 16;              !  Lock value block
;  1917  0      macro BLB$L_VALSEQNO = 40,0,32,0 %;     !  Sequence number part of value block
;  1918  0
;  1919  0      !*** MODULE $RJBDEF ***
;  1920  0      !
;  1921  0      !       RJB Definitions
```

```
;  1922  0      !
;  1923  0      !          RMS Journaling Block (RJB)
;  1924  0      !
;  1925  0      !          This block contains the necessary control information to keep
;  1926  0      !          track of the state of journaling on this file
;  1927  0      !
;  1928  0      literal RJB$C_BID = 22;
;  1929  0      literal RJB$K_BLN = 12;                 ! Length of RJB
;  1930  0      literal RJB$C_BLN = 12;                 ! Length of RJB
;  1931  0      literal RJB$M_RU = 1;
;  1932  0      literal RJB$M_BI = 2;
;  1933  0      literal RJB$M_AI = 4;
;  1934  0      literal RJB$M_AT = 8;
;  1935  0      literal RJB$M_OPEN = 16;
;  1936  0      literal RJB$S_RJBDEF = 12;
;  1937  0      macro RJB$Q_CHAN = 0,0,0,0 %;
;  1938  0      literal RJB$S_CHAN = 8;                 ! Channel Block
;  1939  0      macro RJB$W_ROCHAN = 0,0,16,0 %;        !  channel for recovery unit journal
;  1940  0      macro RJB$W_BICHAN = 2,0,16,0 %;        !  channel for before image journal
;  1941  0      macro RJB$W_AICHAN = 4,0,16,0 %;        !  channel for after image journal
;  1942  0      macro RJB$W_ATCHAN = 6,0,16,0 %;        !  channel for audit trail journal
;  1943  0      macro RJB$B_BID = 8,0,8,0 %;            ! Block Id
;  1944  0      macro RJB$B_BLN = 9,0,8,0 %;            ! Block Length
;  1945  0      macro RJB$W_FLAGS = 10,0,16,0 %;        ! Flags word
;  1946  0      macro RJB$V_RU = 10,0,1,0 %;            ! Set to indicate RU channel open
;  1947  0      macro RJB$V_BI = 10,1,1,0 %;            ! Set to indicate BI channel open
;  1948  0      macro RJB$V_AI = 10,2,1,0 %;            ! Set to indicate AI channel open
;  1949  0      macro RJB$V_AT = 10,3,1,0 %;            ! Set to indicate AT channel open
;  1950  0      macro RJB$V_OPEN = 10,4,1,0 %;          ! Indicates $OPEN mapping entry written
;  1951  0
;  1952  0      !*** MODULE $MJBDEF ***
;  1953  0      !
;  1954  0      !          MJB field definitions
;  1955  0      !
;  1956  0      !            Miscellaneous Journaling Buffer
;  1957  0      !
;  1958  0      !          The MJB is used for writing miscellaneous journal entries,
;  1959  0      !          for example, extend entries or audit-trail entries.
;  1960  0      !
;  1961  0      literal MJB$C_BID = 24;
;  1962  0      literal MJB$M_INIT = 1;
;  1963  0      literal MJB$M_FORCE = 2;
;  1964  0      literal MJB$M_FILE = 4;
;  1965  0      literal MJB$M_SYNCH_SHARE = 8;
;  1966  0      literal MJB$K_BLN = 32;
;  1967  0      literal MJB$C_BLN = 32;
;  1968  0      literal MJB$S_MJBDEF = 32;
;  1969  0      macro MJB$B_BID = 8,0,8,0 %;            !  block id
;  1970  0      macro MJB$B_BLN = 9,0,8,0 %;            !  block length in longwords
;  1971  0      macro MJB$W_FLAGS = 10,0,16,0 %;        !  flags
;  1972  0      macro MJB$V_INIT = 10,0,1,0 %;          !  set if RJR overhead is initialized
;  1973  0      macro MJB$V_FORCE = 10,1,1,0 %;         !  set if RJR is to be written thru to journal
;  1974  0      macro MJB$V_FILE = 10,2,1,0 %;          !  set if file operation to journal
;  1975  0      macro MJB$V_SYNCH_SHARE = 10,3,1,0 %;   !  set if file lock can't be released during
;  1976  0      !  STALL
;  1977  0      !  and not buffered by CJF (input to WRITE_MJB)
;  1978  0      macro MJB$B_JNL = 12,0,8,0 %;           !  set to CJF$_"jnl type" as input to WRITE_MJB
```

```
1979  0     macro MJB$Q_DESC = 16,0,0,0 %;
1980  0     literal MJB$S_DESC = 8;                 !  RJR descriptor used in $WRITEJNL service
1981  0     macro MJB$W_SIZE = 16,0,16,0 %;         !  size of RJR to write
1982  0     macro MJB$L_POINTER = 20,0,32,0 %;      !  pointer to RJR
1983  0     macro MJB$Q_IOSB = 24,0,0,0 %;
1984  0     literal MJB$S_IOSB = 8;                 !  IOSB to use in $WRITEJNL
1985  0     macro MJB$T_RJR = 32,0,0,0 %;           !  the journal record begins here
1986  0     !
1987  0     !***************************************************************************
1988  0     !*                                                                         *
1989  0     !*  Copyright (c) 1982, 1983                                               *
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2001  0     !*  Corporation.                                                           *
2002  0     !*                                                                         *
2003  0     !*  DIGITAL assumes no responsibility for the use or  reliability  of  its  *
2004  0     !*  software on equipment which is not supplied by DIGITAL.                *
2005  0     !*                                                                         *
2006  0     !***************************************************************************
2007  0     !***************************************************************************************************************
2008  0     ! Created 15-SEP-1984 22:54:20  by  VAX-11 SDL V2.0      Source: 15-SEP-1984 22:49:17 _$255$DUA28:[RMS.SRC]RMSFWAD
2009  0     !***************************************************************************************************************
2010  0
2011  0     !
2012  0     !*** MODULE $FWADEF ***
2013  0     ! **
2014  0     !
2015  0     !  Flags
2016  0     !
2017  0     ! --
2018  0     literal FWA$M_DUPOK = 1;
2019  0     literal FWA$M_NOCOPY = 2;
2020  0     literal FWA$M_SL_PASS = 4;
2021  0     literal FWA$M_RLF_PASS = 8;
2022  0     literal FWA$M_FNA_PASS = 16;
2023  0     literal FWA$M_NAM_DVI = 32;
2024  0     literal FWA$M_EXP_NODE = 64;
2025  0     literal FWA$M_VERSION = 2048;
2026  0     literal FWA$M_TYPE = 4096;
2027  0     literal FWA$M_NAME = 8192;
2028  0     literal FWA$M_DIR = 16384;
2029  0     literal FWA$M_DEVICE = 32768;
2030  0     literal FWA$M_EXP_VER = 65536;
2031  0     literal FWA$M_EXP_TYPE = 131072;
2032  0     literal FWA$M_EXP_NAME = 262144;
2033  0     literal FWA$M_WC_VER = 524288;
2034  0     literal FWA$M_WC_TYPE = 1048576;
2035  0     literal FWA$M_WC_NAME = 2097152;
```

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;  2036  0      literal FWA$M_EXP_DIR = 4194304;
;  2037  0      literal FWA$M_EXP_DEV = 8388608;
;  2038  0      literal FWA$M_WILDCARD = 16777216;
;  2039  0      literal FWA$M_NODE = 33554432;
;  2040  0      literal FWA$M_QUOTED = 67108864;
;  2041  0      literal FWA$M_GRPMBR = 134217728;
;  2042  0      literal FWA$M_WILD_DIR = 268435456;
;  2043  0      literal FWA$M_DIR_LVLS = -536870912;
;  2044  0      literal FWA$C_ALL = 248;
;  2045  0      !
;  2046  0      !  constant for all flags that vary per parsing pass
;  2047  0      !
;  2048  0      literal FWA$C_ALLPASS = 25;
;  2049  0      ! ++
;  2050  0      !
;  2051  0      !  Misc. Fields
;  2052  0      !
;  2053  0      ! --
;  2054  0      literal FWA$C_BID = 40;                  !  bid of fwa
;  2055  0      literal FWA$C_MAXNODNAM = 6;             !  max node name size
;  2056  0      literal FWA$C_MAXLNDNAM = 15;            !  max logical node name size
;  2057  0      literal FWA$C_MAXNODLST = 127;           !  max node spec list size (concatenated node specs)
;  2058  0      !
;  2059  0      !          device name descriptor
;  2060  0      !
;  2061  0      literal FWA$C_MAXDEVICE = 255;           !  max device name size
;  2062  0      literal FWA$C_MAXCDIR = 8;               !  max number of concealed directories
;  2063  0      literal FWA$C_MAXSUBDIR = 7;             !  max number of sub directories
;  2064  0      literal FWA$C_MAXDIRLEN = 255;           !  max size of total directory spec
;  2065  0      !    should be:  top + subdir   39 * 8
;  2066  0      !                dots between      7
;  2067  0      !                delimiters        2
;  2068  0      !                ------------------
;  2069  0      !                total           321
;  2070  0      !
;  2071  0      !        The filename, filetype and fileversion descriptors MUST be contiguous
;  2072  0      !
;  2073  0      !          file name descriptor
;  2074  0      !
;  2075  0      literal FWA$C_MAXNAME = 39;              !  max file name size
;  2076  0      literal FWA$C_MAXQUOTED = 255;           !  max quoted string size
;  2077  0      !
;  2078  0      !          file type descriptor
;  2079  0      !
;  2080  0      literal FWA$C_MAXTYPE = 39;              !  max file type size
;  2081  0      !
;  2082  0      !          file version number descriptor
;  2083  0      !
;  2084  0      literal FWA$C_MAXVER = 6;                !  maximum version
;  2085  0      literal FWA$C_MAXRNS = 86;               !  max resultant name string size
;  2086  0      literal FWA$C_STATBLK = 10;               !  define length of statistics block
;  2087  0      literal FWA$K_BLN_FWA = 500;              !  length of fwa
;  2088  0      literal FWA$C_BLN_FWA = 500;              !  length of fwa
;  2089  0      literal FWA$C_MAXSUBNOD = 7;              !  max number of secondary (sub) node specs
;  2090  0      ! ++
;  2091  0      !
;  2092  0      !   buffers for parsed filename elements
```

```
;  2093  0     !
;  2094  0     ! --
;  2095  0     literal FWA$C_FIBLEN = 76;              !  fib buffer size
;  2096  0     literal FWA$C_DIRBUFSIZ = 39;           !  size of each directory buffer
;  2097  0     !
;  2098  0     !   rooted directory name buffers
;  2099  0     !
;  2100  0     !   NOTE:  These buffers must be contiguous
;  2101  0     !
;  2102  0     literal FWA$K_BLN_BUF = 2364;           !  length of fwa and buffers
;  2103  0     literal FWA$C_BLN_BUF = 2364;           !  length of fwa and buffers
;  2104  0     literal FWA$K_BLN = 2364;               !  length of fwa and buffers
;  2105  0     literal FWA$C_BLN = 2364;               !  length of fwa and buffers
;  2106  0     literal FWA$S_FWADEF = 2364;
;  2107  0     macro FWA$Q_FLAGS = 0,0,0,0 %;
;  2108  0     literal FWA$S_FLAGS = 8;                !  various parse status flags
;  2109  0     macro FWA$B_PASSFLGS = 0,0,8,0 %;       !  flags for pass only
;  2110  0     macro FWA$B_FLDFLGS = 1,0,8,0 %;        !  flags for fields seen
;  2111  0     macro FWA$B_WILDFLGS = 2,0,8,0 %;       !  flags for wild cards
;  2112  0     macro FWA$B_PARSEFLGS = 3,0,8,0 %;      !  flags for parse results
;  2113  0     macro FWA$B_DIRFLGS = 4,0,8,0 %;        !  flags primarily for directory spec
;  2114  0     macro FWA$B_DIRWCFLGS = 5,0,8,0 %;      !  directory wild flags
;  2115  0     macro FWA$B_LNFLGS = 6,0,8,0 %;         !  logical name flag byte
;  2116  0     macro FWA$B_SLFLGS = 7,0,8,0 %;         !  search list + rooted directory flags
;  2117  0     !
;  2118  0     !  flags for pass
;  2119  0     !
;  2120  0     macro FWA$V_DUPOK = 0,0,1,0 %;          !  discard duplicate element
;  2121  0     macro FWA$V_NOCOPY = 0,1,1,0 %;         !  do not copy this field
;  2122  0     macro FWA$V_SL_PASS = 0,2,1,0 %;        !  search list pass
;  2123  0     macro FWA$V_RLF_PASS = 0,3,1,0 %;       !  set if applying related file defaults
;  2124  0     macro FWA$V_FNA_PASS = 0,4,1,0 %;       !  set if primary name string parse pass
;  2125  0     macro FWA$V_NAM_DVI = 0,5,1,0 %;        !  set if open by name block
;  2126  0     macro FWA$V_EXP_NODE = 0,6,1,0 %;       !  explicit node has been seen, null or normal
;  2127  0     !
;  2128  0     !  flags for fields seen
;  2129  0     !
;  2130  0     macro FWA$V_VERSION = 0,11,1,0 %;       !  set if version seen
;  2131  0     macro FWA$V_TYPE = 0,12,1,0 %;          !  set if type seen
;  2132  0     macro FWA$V_NAME = 0,13,1,0 %;          !  set if name seen
;  2133  0     macro FWA$V_DIR = 0,14,1,0 %;           !  set if directory spec seen
;  2134  0     macro FWA$V_DEVICE = 0,15,1,0 %;        !  set if device seen
;  2135  0     !
;  2136  0     !  flags for wild cards
;  2137  0     !
;  2138  0     macro FWA$V_EXP_VER = 0,16,1,0 %;       !  set if explicit version
;  2139  0     macro FWA$V_EXP_TYPE = 0,17,1,0 %;      !  set if explicit type
;  2140  0     macro FWA$V_EXP_NAME = 0,18,1,0 %;      !  set if explicit name
;  2141  0     macro FWA$V_WC_VER = 0,19,1,0 %;        !  set if wildcard (*) version
;  2142  0     macro FWA$V_WC_TYPE = 0,20,1,0 %;       !  " type
;  2143  0     macro FWA$V_WC_NAME = 0,21,1,0 %;       !  " name
;  2144  0     macro FWA$V_EXP_DIR = 0,22,1,0 %;       !  set if explicit directory
;  2145  0     macro FWA$V_EXP_DEV = 0,23,1,0 %;       !  set if explicit device
;  2146  0     !
;  2147  0     !  flags for parse results
;  2148  0     !
;  2149  0     macro FWA$V_WILDCARD = 0,24,1,0 %;      !  set if any wildcard seen
```

```
;    2150  0      macro FWA$V_NODE = 0,25,1,0 %;          !  set if node name seen
;    2151  0      macro FWA$V_QUOTED = 0,26,1,0 %;        !  set is quoted string seen
;    2152  0      macro FWA$V_GRPMBR = 0,27,1,0 %;        !  set if directory in [grp,mbr] format
;    2153  0      macro FWA$V_WILD_DIR = 0,28,1,0 %;      !  inclusive or of directory wild cards
;    2154  0      macro FWA$V_DIR_LVLS = 0,29,3,0 %;
;    2155  0      literal FWA$S_DIR_LVLS = 3;             !  ! of directory sublevels (0 = ufd only)
;    2156  0      !  (valid only if node set and no fldflgs)
;    2157  0      !
;    2158  0      !  flags primarily for directory spec
;    2159  0      !
;    2160  0      macro FWA$V_DIR1 = 4,0,1,0 %;           !  ufd level directory or group seen
;    2161  0      macro FWA$V_DIR2 = 4,1,1,0 %;           !  sfd level 1 directory or member seen
;    2162  0      !
;    2163  0      !  directory wild flags
;    2164  0      !
;    2165  0      macro FWA$V_WILD_UFD = 4,8,1,0 %;       !  the dir1 spec was a wild card
;    2166  0      macro FWA$V_WILD_SFD1 = 4,9,1,0 %;      !  the dir2 spec was a wild card
;    2167  0      macro FWA$V_WILD_GRP = 4,8,1,0 %;       !  the grp spec contained a wild card
;    2168  0      macro FWA$V_WILD_MBR = 4,9,1,0 %;       !  the mbr spec contained a wild card
;    2169  0      !
;    2170  0      !  logical name flag and miscellaneous byte
;    2171  0      !
;    2172  0      macro FWA$V_LOGNAME = 4,16,1,0 %;       !  a logical name has been seen this pass
;    2173  0      !    (note: this byte is saved as context
;    2174  0      !    when processing [.dir-list] format)
;    2175  0      macro FWA$V_OBJTYPE = 4,17,1,0 %;       !  set if quoted string is of the
;    2176  0      !    "objecttype=..." form
;    2177  0      !    (valid only if quoted set)
;    2178  0      macro FWA$V_NETSTR = 4,18,1,0 %;        !  set if quoted string is of the
;    2179  0      !    "objecttype=taskname/..." form
;    2180  0      !    (valid only if quoted and objtype set)
;    2181  0      macro FWA$V_DEV_UNDER = 4,19,1,0 %;     !  device name was prefixed with an underscore
;    2182  0      macro FWA$V_FILEFOUND = 4,20,1,0 %;     !  true if at least one file found by search
;    2183  0      macro FWA$V_REMRESULT = 4,21,1,0 %;     !  use resultant string returned by fal
;    2184  0      macro FWA$V_SYNTAX_CHK = 4,22,1,0 %;    !  syntax-only checking is requested (NAM$V_SYNCHK set)
;    2185  0      !
;    2186  0      !  search list and rooted directory flag byte
;    2187  0      !
;    2188  0      macro FWA$V_SLPRESENT = 4,24,1,0 %;     !  search list present
;    2189  0      macro FWA$V_CONCEAL_DEV = 4,25,1,0 %;   !  concealed device present
;    2190  0      macro FWA$V_ROOT_DIR = 4,26,1,0 %;      !  root directory present
;    2191  0      macro FWA$V_DFLT_MFD = 4,27,1,0 %;      !  default MFD string inserted, due to [-]
;    2192  0      macro FWA$V_EXP_ROOT = 4,28,1,0 %;      !  explicit root directory
;    2193  0      !
;    2194  0      !  Value for all filename elements except node
;    2195  0      !
;    2196  0      macro FWA$B_BID = 8,0,8,0 %;            !  bid
;    2197  0      macro FWA$B_BLN = 9,0,8,0 %;            !  bln
;    2198  0      macro FWA$B_DIRTERM = 10,0,8,0 %;       !  directory spec terminator (']' or '>')
;    2199  0      macro FWA$B_ROOTERM = 11,0,8,0 %;       !  root directory spec terminator (']' or '>')
;    2200  0      macro FWA$L_ESCSTRING = 12,0,32,0 %;    !  escape equivalence string
;    2201  0      macro FWA$B_ESCFLG = 12,0,8,0 %;        !  set to the char <esc> if an escape string
;    2202  0      !  seen, zero otherwise
;    2203  0      macro FWA$B_ESCTYP = 13,0,8,0 %;        !  escape 'type' byte
;    2204  0      macro FWA$W_ESCIFI = 14,0,16,0 %;       !  escape ifi value
;    2205  0      macro FWA$Q_FIB = 16,0,0,0 %;
;    2206  0      literal FWA$S_FIB = 8;                  !  fib descriptor
```

```
;  2207  0     macro FWA$L_DEVBUFSIZ = 24,0,32,0 %;     !  device buffer size
;  2208  0     macro FWA$L_DEV_CLASS = 28,0,32,0 %;     !  device class
;  2209  0     macro FWA$L_RECSIZ = 32,0,32,0 %;        !  blocked record size
;  2210  0     macro FWA$L_UNIT = 36,0,32,0 %;          !  device unit number
;  2211  0     macro FWA$L_UIC = 40,0,32,0 %;           !  file owner uic
;  2212  0     macro FWA$W_PRO = 44,0,16,0 %;           !  file protection word
;  2213  0     macro FWA$B_DIRLEN = 46,0,8,0 %;         !  overall directory spec length
;  2214  0     macro FWA$B_SUBNODCNT = 47,0,8,0 %;      !  number of secondary (sub) node specs found
;  2215  0     macro FWA$L_DIRBDB = 48,0,32,0 %;        !  address of directory file bdb
;  2216  0     macro FWA$L_LOOKUP = 52,0,32,0 %;        !  address of new directory cache node
;  2217  0     macro FWA$L_DEVNODADR = 56,0,32,0 %;     !  address of device directory cache node
;  2218  0     macro FWA$Q_DIR = 60,0,0,0 %;
;  2219  0     literal FWA$S_DIR = 8;                   !  directory name scratch buffer
;  2220  0     macro FWA$L_UCHAR = 68,0,32,0 %;         !  user characteristics longword
;  2221  0     macro FWA$W_UCHAR = 68,0,16,0 %;
;  2222  0     macro FWA$L_FWA_PTR = 72,0,32,0 %;       !  pointer to second fwa if any ($RENAME)
;  2223  0     macro FWA$L_SWB_PTR = 76,0,32,0 %;       !  pointer to swb
;  2224  0     macro FWA$L_BUF_PTR = 80,0,32,0 %;       !  address of temporary buffer
;  2225  0     macro FWA$L_IMPUKE_AREA = 84,0,32,0 %;   !  saved R11 (rm$xpfn only)
;  2226  0     macro FWA$L_ATR_WORK = 88,0,32,0 %;      !  pointer to work area for ACP attributes
;  2227  0     !    (zero if one not currently allocated)
;  2228  0     !+
;  2229  0     !
;  2230  0     !  Logical name and search list fields
;  2231  0     !
;  2232  0     !-
;  2233  0     !
;  2234  0     !  Item list block for logical name services
;  2235  0     !
;  2236  0     macro FWA$T_ITMLST = 92,0,0,0 %;
;  2237  0     literal FWA$S_ITMLST = 64;               !  logical name item list
;  2238  0     macro FWA$T_ITM_INDEX = 92,0,0,0 %;
;  2239  0     literal FWA$S_ITM_INDEX = 12;            !  index
;  2240  0     macro FWA$T_ITM_ATTR = 104,0,0,0 %;
;  2241  0     literal FWA$S_ITM_ATTR = 12;             !  attributes
;  2242  0     macro FWA$T_ITM_STRING = 116,0,0,0 %;
;  2243  0     literal FWA$S_ITM_STRING = 12;           !  string
;  2244  0     macro FWA$T_ITM_MAX_INDEX = 128,0,0,0 %;
;  2245  0     literal FWA$S_ITM_MAX_INDEX = 12;        !  max index
;  2246  0     macro FWA$L_ITM_END = 140,0,32,0 %;      !  terminating longword
;  2247  0     !
;  2248  0     !  Logical name translation fields
;  2249  0     !
;  2250  0     macro FWA$B_BUFFLG = 156,0,8,0 %;        !  flag for which translation buffer is in use
;  2251  0     !    (0 = buf2 in use, -1 = buf1 in use)
;  2252  0     macro FWA$B_XLTMODE = 157,0,8,0 %;       !  mode of translation on input to $TRNLNM
;  2253  0     !  mode of equivalence string on output from $TRNLNM
;  2254  0     macro FWA$W_XLTSIZ = 158,0,16,0 %;       !  length of equivalence string
;  2255  0     macro FWA$L_XLTBUFF1 = 160,0,32,0 %;     !  primary translation buffer descriptor
;  2256  0     macro FWA$L_XLTBUFF2 = 164,0,32,0 %;     !  secondary translation buffer descriptor
;  2257  0     !
;  2258  0     !  SLBH and SLB pointers
;  2259  0     !
;  2260  0     macro FWA$L_SLBH_PTR = 168,0,32,0 %;     !  current SLB list
;  2261  0     macro FWA$L_SLB_PTR = 172,0,32,0 %;      !  current SLB list
;  2262  0     macro FWA$L_SLBH_FLINK = 176,0,32,0 %;   !  SLBH que fwd link
;  2263  0     macro FWA$L_SLBH_BLINK = 180,0,32,0 %;   !  SLBH que back link
```

```
;  2264  0     !
;  2265  0     !  Fake SLB -   NOTE:        This MUST be the size of SLB$C_BLN
;  2266  0     !                         The field FWA$B_LEVEL must be at the same offset
;  2267  0     !                         as SLB$Q_LEVEL would be.  (It sounds like a real
;  2268  0     !                         hack but it works very nicely)
;  2269  0     !
;  2270  0     macro FWA$T_SLB = 184,0,0,0 %;
;  2271  0     literal FWA$S_SLB = 24;                 !  space for SLB$C_BLN
;  2272  0     macro FWA$B_LEVEL = 195,0,8,0 %;        !  recursion level
;  2273  0     !
;  2274  0     !  Logical name descriptor
;  2275  0     !
;  2276  0     macro FWA$Q_LOGNAM = 208,0,0,0 %;
;  2277  0     literal FWA$S_LOGNAM = 8;               !  logical name descriptor
;  2278  0     !++
;  2279  0     !
;  2280  0     !   descriptors for parsed filename elements
;  2281  0     !
;  2282  0     !
;  2283  0     !         The descriptors are defined as:
;  2284  0     !
;  2285  0     !         ----------------------------------------------
;  2286  0     !         |        flags          |              length  |
;  2287  0     !         |-----------------------|----------------------|
;  2288  0     !         |                     address                  |
;  2289  0     !         ----------------------------------------------
;  2290  0     !
;  2291  0     !
;  2292  0     !         The flags are defined by FSCB$V_flag in $FSCBDEF
;  2293  0     !
;  2294  0     !--
;  2295  0     macro FWA$Q_NODE = 216,0,0,0 %;
;  2296  0     literal FWA$S_NODE = 8;                 !  node name (actually node spec list) descriptor
;  2297  0     !  (the associated buffer is fwa$t_nodebuf)
;  2298  0     macro FWA$Q_DEVICE = 224,0,0,0 %;
;  2299  0     literal FWA$S_DEVICE = 8;               !  device name descriptor
;  2300  0     macro FWA$Q_CONCEAL_DEV = 232,0,0,0 %;
;  2301  0     literal FWA$S_CONCEAL_DEV = 8;          !  concealed device descriptor
;  2302  0     !
;  2303  0     !         directory name descriptors   NOTE:  The two sets of directory
;  2304  0     !                                              descriptors must be contigous
;  2305  0     !                                              or RMSSETDID will break
;  2306  0     !
;  2307  0     macro FWA$Q_CDIR1 = 240,0,0,0 %;
;  2308  0     literal FWA$S_CDIR1 = 8;                !  concealed top directory descriptors
;  2309  0     macro FWA$Q_CDIR2 = 248,0,0,0 %;
;  2310  0     literal FWA$S_CDIR2 = 8;                !  concealed subdirectory 1
;  2311  0     macro FWA$Q_CDIR3 = 256,0,0,0 %;
;  2312  0     literal FWA$S_CDIR3 = 8;                !  " " 2
;  2313  0     macro FWA$Q_CDIR4 = 264,0,0,0 %;
;  2314  0     literal FWA$S_CDIR4 = 8;                !  " " 3
;  2315  0     macro FWA$Q_CDIR5 = 272,0,0,0 %;
;  2316  0     literal FWA$S_CDIR5 = 8;                !  " " 4
;  2317  0     macro FWA$Q_CDIR6 = 280,0,0,0 %;
;  2318  0     literal FWA$S_CDIR6 = 8;                !  " " 5
;  2319  0     macro FWA$Q_CDIR7 = 288,0,0,0 %;
;  2320  0     literal FWA$S_CDIR7 = 8;                !  " " 6
```

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;    2321  0      macro FWA$Q_CDIR8 = 296,0,0,0 %;
;    2322  0      literal FWA$S_CDIR8 = 8;                    !  " " 7
;    2323  0      macro FWA$Q_DIR1 = 304,0,0,0 %;
;    2324  0      literal FWA$S_DIR1 = 8;                     !  top level directory descriptors
;    2325  0      macro FWA$Q_DIR2 = 312,0,0,0 %;
;    2326  0      literal FWA$S_DIR2 = 8;                     !  subdirectory 1
;    2327  0      macro FWA$Q_DIR3 = 320,0,0,0 %;
;    2328  0      literal FWA$S_DIR3 = 8;                     !  " 2
;    2329  0      macro FWA$Q_DIR4 = 328,0,0,0 %;
;    2330  0      literal FWA$S_DIR4 = 8;                     !  " 3
;    2331  0      macro FWA$Q_DIR5 = 336,0,0,0 %;
;    2332  0      literal FWA$S_DIR5 = 8;                     !  " 4
;    2333  0      macro FWA$Q_DIR6 = 344,0,0,0 %;
;    2334  0      literal FWA$S_DIR6 = 8;                     !  " 5
;    2335  0      macro FWA$Q_DIR7 = 352,0,0,0 %;
;    2336  0      literal FWA$S_DIR7 = 8;                     !  " 6
;    2337  0      macro FWA$Q_DIR8 = 360,0,0,0 %;
;    2338  0      literal FWA$S_DIR8 = 8;                     !  " 7
;    2339  0      macro FWA$Q_NAME = 368,0,0,0 %;
;    2340  0      literal FWA$S_NAME = 8;                     !  file name descriptor
;    2341  0      macro FWA$Q_QUOTED = 368,0,0,0 %;
;    2342  0      literal FWA$S_QUOTED = 8;                   !  quoted string descriptor
;    2343  0      macro FWA$Q_TYPE = 376,0,0,0 %;
;    2344  0      literal FWA$S_TYPE = 8;                     !  file type descriptor
;    2345  0      macro FWA$Q_VERSION = 384,0,0,0 %;
;    2346  0      literal FWA$S_VERSION = 8;                  !  file version descriptor
;    2347  0      macro FWA$Q_RNS = 392,0,0,0 %;
;    2348  0      literal FWA$S_RNS = 8;                      !  resultant name string descriptor
;    2349  0      macro FWA$Q_SHRFIL = 400,0,0,0 %;
;    2350  0      literal FWA$S_SHRFIL = 8;                   !  shared file device descriptor (readable form)
;    2351  0      macro FWA$Q_SHRFIL_LCK = 408,0,0,0 %;
;    2352  0      literal FWA$S_SHRFIL_LCK = 8;               !  shared file device descriptor (unreadable form - used for lock name)
;    2353  0      macro FWA$Q_AS_SHRFIL = 416,0,0,0 %;
;    2354  0      literal FWA$S_AS_SHRFIL = 8;                !  secondary device descriptor (readable form)
;    2355  0      macro FWA$T_STATBLK = 424,0,0,0 %;
;    2356  0      literal FWA$S_STATBLK = 10;                 !
;    2357  0      macro FWA$L_SBN = 424,0,32,0 %;             !  starting lbn if contiguous
;    2358  0      macro FWA$L_HBK = 428,0,32,0 %;             !  high vbn
;    2359  0      !
;    2360  0      !   node descriptors
;    2361  0      !
;    2362  0      macro FWA$Q_NODE1 = 436,0,0,0 %;
;    2363  0      literal FWA$S_NODE1 = 8;                    !  primary node spec descriptor
;    2364  0      !  (the associated buffer is fwa$t_nodebuf)
;    2365  0      macro FWA$Q_NODE2 = 444,0,0,0 %;
;    2366  0      literal FWA$S_NODE2 = 8;                    !  secondary (sub) node spec descriptors (1-7)
;    2367  0      macro FWA$Q_NODE3 = 452,0,0,0 %;
;    2368  0      literal FWA$S_NODE3 = 8;                    !  note: bytes 2-3 of each of these descriptors
;    2369  0      macro FWA$Q_NODE4 = 460,0,0,0 %;
;    2370  0      literal FWA$S_NODE4 = 8;                    !  contains the flags word that is output
;    2371  0      macro FWA$Q_NODE5 = 468,0,0,0 %;
;    2372  0      literal FWA$S_NODE5 = 8;                    !  from nxtfld subroutine in rm0xpfn
;    2373  0      macro FWA$Q_NODE6 = 476,0,0,0 %;
;    2374  0      literal FWA$S_NODE6 = 8;                    !  note: fwa$q_node1 thru 'fwa$q_node8'
;    2375  0      macro FWA$Q_NODE7 = 484,0,0,0 %;
;    2376  0      literal FWA$S_NODE7 = 8;                    !  describe the same string as does
;    2377  0      macro FWA$Q_NODE8 = 492,0,0,0 %;
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;    2378  0      literal FWA$S_NODE8 = 8;                    !  fwa$q_node
;    2379  0      macro FWA$T_FIBBUF = 500,0,0,0 %;
;    2380  0      literal FWA$S_FIBBUF = 76;                  !  fib buffer
;    2381  0      macro FWA$T_RNM_FID = 576,0,0,0 %;
;    2382  0      literal FWA$S_RNM_FID = 6;                  !  saved fid for rename directory check
;    2383  0      !
;    2384  0      !   directory name buffers
;    2385  0      !
;    2386  0      !   NOTE:  These buffers must be contiguous
;    2387  0      !
;    2388  0      macro FWA$T_DIR1BUF = 582,0,0,0 %;
;    2389  0      literal FWA$S_DIR1BUF = 39;                 !  ufd level (or group)
;    2390  0      macro FWA$T_DIR2BUF = 621,0,0,0 %;
;    2391  0      literal FWA$S_DIR2BUF = 39;                 !  1st sfd level (or member)
;    2392  0      macro FWA$T_DIR3BUF = 660,0,0,0 %;
;    2393  0      literal FWA$S_DIR3BUF = 39;                 !  subdirectory 2
;    2394  0      macro FWA$T_DIR4BUF = 699,0,0,0 %;
;    2395  0      literal FWA$S_DIR4BUF = 39;                 !  subdirectory 3
;    2396  0      macro FWA$T_DIR5BUF = 738,0,0,0 %;
;    2397  0      literal FWA$S_DIR5BUF = 39;                 !  subdirectory 4
;    2398  0      macro FWA$T_DIR6BUF = 777,0,0,0 %;
;    2399  0      literal FWA$S_DIR6BUF = 39;                 !  subdirectory 5
;    2400  0      macro FWA$T_DIR7BUF = 816,0,0,0 %;
;    2401  0      literal FWA$S_DIR7BUF = 39;                 !  subdirectory 6
;    2402  0      macro FWA$T_DIR8BUF = 855,0,0,0 %;
;    2403  0      literal FWA$S_DIR8BUF = 39;                 !  subdirectory 7
;    2404  0      macro FWA$T_CDIR1BUF = 894,0,0,0 %;
;    2405  0      literal FWA$S_CDIR1BUF = 39;                !  ufd level (or group)
;    2406  0      macro FWA$T_CDIR2BUF = 933,0,0,0 %;
;    2407  0      literal FWA$S_CDIR2BUF = 39;                !  1st sfd level (or member)
;    2408  0      macro FWA$T_CDIR3BUF = 972,0,0,0 %;
;    2409  0      literal FWA$S_CDIR3BUF = 39;                !  subdirectory 2
;    2410  0      macro FWA$T_CDIR4BUF = 1011,0,0,0 %;
;    2411  0      literal FWA$S_CDIR4BUF = 39;                !  subdirectory 3
;    2412  0      macro FWA$T_CDIR5BUF = 1050,0,0,0 %;
;    2413  0      literal FWA$S_CDIR5BUF = 39;                !  subdirectory 4
;    2414  0      macro FWA$T_CDIR6BUF = 1089,0,0,0 %;
;    2415  0      literal FWA$S_CDIR6BUF = 39;                !  subdirectory 5
;    2416  0      macro FWA$T_CDIR7BUF = 1128,0,0,0 %;
;    2417  0      literal FWA$S_CDIR7BUF = 39;                !  subdirectory 6
;    2418  0      macro FWA$T_CDIR8BUF = 1167,0,0,0 %;
;    2419  0      literal FWA$S_CDIR8BUF = 39;                !  subdirectory 7
;    2420  0      !
;    2421  0      !   NOTES: 1. The following buffers must be contiguous as eventually the
;    2422  0      !                type and version are appended to the name string
;    2423  0      !
;    2424  0      !             2. The name buffer and the type buffer must be 1 byte larger then
;    2425  0      !                the max name and type size (resp) because xpfn writes the
;    2426  0      !                name and type terminators in the buffer at the end of the string
;    2427  0      !
;    2428  0      macro FWA$T_NAMEBUF = 1206,0,0,0 %;
;    2429  0      literal FWA$S_NAMEBUF = 256;                !  file name/quoted string buffer
;    2430  0      macro FWA$T_TYPEBUF = 1462,0,0,0 %;
;    2431  0      literal FWA$S_TYPEBUF = 40;                 !  file type buffer
;    2432  0      macro FWA$T_VERBUF = 1502,0,0,0 %;
;    2433  0      literal FWA$S_VERBUF = 6;                   !  file version buffer
;    2434  0      macro FWA$L_UCBSTS = 1508,0,32,0 %;         !  ucb$l_sts field for prim device
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;  2435  0      macro FWA$B_UNDER_DEV = 1512,0,8,0 %;    !  character "_" stored here
;  2436  0      macro FWA$T_DEVICEBUF = 1513,0,0,0 %;
;  2437  0      literal FWA$S_DEVICEBUF = 255;           !  device name buffer
;  2438  0      macro FWA$T_CDEVICEBUF = 1768,0,0,0 %;
;  2439  0      literal FWA$S_CDEVICEBUF = 256;          !  concealed device name buffer
;  2440  0      macro FWA$B_UNDER_NOD = 2024,0,8,0 %;    !  character "_" stored here
;  2441  0      macro FWA$T_NODEBUF = 2025,0,0,0 %;
;  2442  0      literal FWA$S_NODEBUF = 127;             !  node name buffer
;  2443  0      macro FWA$T_WILD = 2152,0,0,0 %;
;  2444  0      literal FWA$S_WILD = 48;                 !  scratch field used by RMOWILD
;  2445  0      !     size =        count      1
;  2446  0      !                   name      39
;  2447  0      !                   .dir;*     6
;  2448  0      !                   spare      2
;  2449  0      !                   ----------
;  2450  0      !                              48
;  2451  0      macro FWA$T_SHRFILBUF = 2200,0,0,0 %;
;  2452  0      literal FWA$S_SHRFILBUF = 16;            !  shared file device id buffer (readable form)
;  2453  0      macro FWA$T_SHRFIL_LCKNAM = 2216,0,0,0 %;
;  2454  0      literal FWA$S_SHRFIL_LCKNAM = 16;        !  shared file device id buffer (unreadable form - used for lock name)
;  2455  0      macro FWA$T_AS_SHRFILBUF = 2232,0,0,0 %;
;  2456  0      literal FWA$S_AS_SHRFILBUF = 16;         !  secondary device id buffer (readable form)
;  2457  0      macro FWA$Q_BIJNL = 2248,0,0,0 %;
;  2458  0      literal FWA$S_BIJNL = 8;                 !  descriptor of BI journal name
;  2459  0      macro FWA$Q_AIJNL = 2256,0,0,0 %;
;  2460  0      literal FWA$S_AIJNL = 8;                 !  descriptor of AI journal name
;  2461  0      macro FWA$Q_ATJNL = 2264,0,0,0 %;
;  2462  0      literal FWA$S_ATJNL = 8;                 !  descriptor of AT journal name
;  2463  0      macro FWA$T_BIACE = 2272,0,0,0 %;
;  2464  0      literal FWA$S_BIACE = 20;                !  BI journal name ACE
;  2465  0      macro FWA$T_BIJNLN = 2276,0,0,0 %;
;  2466  0      literal FWA$S_BIJNLN = 16;
;  2467  0      macro FWA$T_AIACE = 2292,0,0,0 %;
;  2468  0      literal FWA$S_AIACE = 20;                !  AI journal name ACE
;  2469  0      macro FWA$T_AIJNLN = 2296,0,0,0 %;
;  2470  0      literal FWA$S_AIJNLN = 16;
;  2471  0      macro FWA$T_ATACE = 2312,0,0,0 %;
;  2472  0      literal FWA$S_ATACE = 20;                !  AT journal name ACE
;  2473  0      macro FWA$T_ATJNLN = 2316,0,0,0 %;
;  2474  0      literal FWA$S_ATJNLN = 16;
;  2475  0      macro FWA$T_IDACE = 2332,0,0,0 %;
;  2476  0      literal FWA$S_IDACE = 32;                !  Journal ID ACE
;  2477  0      macro FWA$T_JNLID = 2336,0,0,0 %;
;  2478  0      literal FWA$S_JNLID = 28;                !  complete journal ID
;  2479  0      macro FWA$T_VOLNAM = 2336,0,0,0 %;
;  2480  0      literal FWA$S_VOLNAM = 12;               !  volume lable of media file resides on
;  2481  0      macro FWA$T_FID = 2348,0,0,0 %;
;  2482  0      literal FWA$S_FID = 6;                   !  file-id
;  2483  0      macro FWA$Q_ID_DATE = 2356,0,0,0 %;
;  2484  0      literal FWA$S_ID_DATE = 8;                !  id time stamp
;  2485  0
;  2486  0      !*** MODULE $SLBHDEF ***
;  2487  0      !
;  2488  0      !          SLBH        - Search List Header Block
;  2489  0      !
;  2490  0      literal SLBH$C_BID = 43;                 !  ID
;  2491  0      literal SLBH$K_BLN = 20;                 !  length of SLBH
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;  2492  0     literal SLBH$C_BLN = 20;                    !  length of SLBH
;  2493  0     literal SLBH$S_SLBHDEF = 20;
;  2494  0     macro SLBH$L_FLINK = 0,0,32,0 %;            !  forward link
;  2495  0     macro SLBH$L_BLINK = 4,0,32,0 %;            !  backward link
;  2496  0     macro SLBH$B_BID = 8,0,8,0 %;               !  block ID
;  2497  0     macro SLBH$B_BLN = 9,0,8,0 %;               !  length
;  2498  0     macro SLBH$B_PASSFLGS = 10,0,8,0 %;         !  flags for FWA$B_PASSFLGS
;  2499  0     macro SLBH$B_STR_LEN = 11,0,8,0 %;          !  string length
;  2500  0     macro SLBH$L_SLB_QUE = 12,0,32,0 %;         !  ptr to SLB queue
;  2501  0     macro SLBH$L_NAM_FNB = 16,0,32,0 %;         !  saved FNB from RLF file
;  2502  0     macro SLBH$T_STRING = 20,0,0,0 %;           !  start of string
;  2503  0
;  2504  0     !*** MODULE $SLBDEF ***
;  2505  0     !
;  2506  0     !          SLB         - Search List Block
;  2507  0     !
;  2508  0     literal SLB$C_BID = 41;                     !  ID
;  2509  0     literal SLB$M_REALSLB = 1;
;  2510  0     literal SLB$K_BLN = 24;                     !  length of SLB
;  2511  0     literal SLB$C_BLN = 24;                     !  length of SLB
;  2512  0     literal SLB$S_SLBDEF = 24;
;  2513  0     macro SLB$L_FLINK = 0,0,32,0 %;             !  forward link
;  2514  0     macro SLB$L_BLINK = 4,0,32,0 %;             !  backward link
;  2515  0     macro SLB$B_BID = 8,0,8,0 %;                !  block ID
;  2516  0     macro SLB$B_BLN = 9,0,8,0 %;                !  length
;  2517  0     macro SLB$B_FLAGS = 10,0,8,0 %;             !  flags
;  2518  0     macro SLB$V_REALSLB = 10,0,1,0 %;           !  "Real" SLB as opposed to the fake FWA one
;  2519  0     macro SLB$B_LEVEL = 11,0,8,0 %;             !  recursion level
;  2520  0     macro SLB$L_INDEX = 12,0,32,0 %;            !  translation index
;  2521  0     macro SLB$L_MAX_INDEX = 16,0,32,0 %;        !  max translation index
;  2522  0     macro SLB$L_ATTR = 20,0,32,0 %;             !  attributes flags
;  2523  0
;  2524  0     !*** MODULE $FSCBDEF ***
;  2525  0     !
;  2526  0     !          FSCB - FileScan control block
;  2527  0     !
;  2528  0     !          This block is passed to PARSE_STRING from XPFN and RMS$FILESCAN
;  2529  0     !
;  2530  0     !
;  2531  0     !          The descriptors are defined as:
;  2532  0     !
;  2533  0     !          ------------------------------------------------
;  2534  0     !          |        flags          |        length        |
;  2535  0     !          |-----------------------------------------------
;  2536  0     !          |                     address                  |
;  2537  0     !          ------------------------------------------------
;  2538  0     !
;  2539  0     !
;  2540  0     !
;  2541  0     !          descriptor flags
;  2542  0     !
;  2543  0     !          These flags are used through out the RMS file name parsing routines.
;  2544  0     !          The flags can be found in all of the field descriptors.
;  2545  0     !
;  2546  0     !          NOTE: The flag ELIPS must be the first bit in the second word.
;  2547  0     !                It is referenced this way in RMOWILD and other places
;  2548  0     !
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;    2549  0      literal FSCB$M_ELIPS = 65536;
;    2550  0      literal FSCB$M_WILD = 131072;
;    2551  0      literal FSCB$M_ACS = 262144;
;    2552  0      literal FSCB$M_QUOTED = 524288;
;    2553  0      literal FSCB$M_NULL = 1048576;
;    2554  0      literal FSCB$M_PWD = 2097152;
;    2555  0      literal FSCB$M_GRPMBR = 4194304;
;    2556  0      literal FSCB$M_MINUS = 8388608;
;    2557  0      literal FSCB$M_CONCEAL = 16777216;
;    2558  0      literal FSCB$M_MFD = 33554432;
;    2559  0      literal FSCB$M_ROOTED = 67108864;
;    2560  0      literal FSCB$S_FSCBDEF = 4;
;    2561  0      macro FSCB$V_ELIPS = 0,16,1,0 %;        !  elipssis was detected in directory (dir)
;    2562  0      macro FSCB$V_WILD = 0,17,1,0 %;         !  a wild card was detected (dir,name,type,ver)
;    2563  0      macro FSCB$V_ACS = 0,18,1,0 %;          !  access control string in node name (node)
;    2564  0      macro FSCB$V_QUOTED = 0,19,1,0 %;       !  quoted file spec (name)
;    2565  0      macro FSCB$V_NULL = 0,20,1,0 %;         !  field was null (terminator only) (all)
;    2566  0      macro FSCB$V_PWD = 0,21,1,0 %;          !  password masked out (set in xpfn) (node)
;    2567  0      macro FSCB$V_GRPMBR = 0,22,1,0 %;       !  group,member format directory (dir)
;    2568  0      macro FSCB$V_MINUS = 0,23,1,0 %;        !  minus directory field (dir)
;    2569  0      macro FSCB$V_CONCEAL = 0,24,1,0 %;      !  name was concealed (dev)
;    2570  0      macro FSCB$V_MFD = 0,25,1,0 %;          !  MFD directory (set in xpfn) (dir)
;    2571  0      macro FSCB$V_ROOTED = 0,26,1,0 %;       !  directory was a root directory (dir)
;    2572  0      !
;    2573  0      !               FSCB
;    2574  0      !
;    2575  0      literal FSCB$M_NODE = 1;
;    2576  0      literal FSCB$M_DEVICE = 2;
;    2577  0      literal FSCB$M_ROOT = 4;
;    2578  0      literal FSCB$M_DIRECTORY = 8;
;    2579  0      literal FSCB$M_NAME = 16;
;    2580  0      literal FSCB$M_TYPE = 32;
;    2581  0      literal FSCB$M_VERSION = 64;
;    2582  0      literal FSCB$C_MAXNODE = 8;             !  max number of node descriptors
;    2583  0      literal FSCB$C_MAXROOT = 8;             !  max number of root descriptors
;    2584  0      literal FSCB$K_BLN = 260;
;    2585  0      literal FSCB$C_BLN = 260;
;    2586  0      literal FSCB$C_MAXDIR = 8;              !  max number of directory descriptors
;    2587  0      literal FSCB$S_FSCBDEF1 = 260;
;    2588  0      macro FSCB$B_FLDFLAGS = 0,0,8,0 %;      !  field flags
;    2589  0      macro FSCB$V_NODE = 0,0,1,0 %;
;    2590  0      macro FSCB$V_DEVICE = 0,1,1,0 %;
;    2591  0      macro FSCB$V_ROOT = 0,2,1,0 %;
;    2592  0      macro FSCB$V_DIRECTORY = 0,3,1,0 %;
;    2593  0      macro FSCB$V_NAME = 0,4,1,0 %;
;    2594  0      macro FSCB$V_TYPE = 0,5,1,0 %;
;    2595  0      macro FSCB$V_VERSION = 0,6,1,0 %;
;    2596  0      macro FSCB$B_NODES = 1,0,8,0 %;         !  number of nodes in spec
;    2597  0      macro FSCB$B_ROOTS = 2,0,8,0 %;         !  number of root directories in spec
;    2598  0      macro FSCB$B_DIRS = 3,0,8,0 %;          !  number of directories in spec
;    2599  0      macro FSCB$Q_FILESPEC = 4,0,0,0 %;
;    2600  0      literal FSCB$S_FILESPEC = 8;            !  full file spec
;    2601  0      macro FSCB$Q_NODE = 12,0,0,0 %;
;    2602  0      literal FSCB$S_NODE = 8;                !  full node list spec
;    2603  0      macro FSCB$Q_DEVICE = 20,0,0,0 %;
;    2604  0      literal FSCB$S_DEVICE = 8;              !  device spec
;    2605  0      macro FSCB$Q_ROOT = 28,0,0,0 %;
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;  2606  0     literal FSCB$S_ROOT = 8;                    !  full root directory list spec
;  2607  0     macro FSCB$Q_DIRECTORY = 36,0,0,0 %;
;  2608  0     literal FSCB$S_DIRECTORY = 8;               !  full directory list spec
;  2609  0     macro FSCB$Q_NAME = 44,0,0,0 %;
;  2610  0     literal FSCB$S_NAME = 8;                    !  file name
;  2611  0     macro FSCB$Q_TYPE = 52,0,0,0 %;
;  2612  0     literal FSCB$S_TYPE = 8;                    !  file type
;  2613  0     macro FSCB$Q_VERSION = 60,0,0,0 %;
;  2614  0     literal FSCB$S_VERSION = 8;                 !  file version
;  2615  0     macro FSCB$Q_NODE1 = 68,0,0,0 %;
;  2616  0     literal FSCB$S_NODE1 = 8;                   !  the NODEn descriptors must be contiguous
;  2617  0     macro FSCB$Q_NODE2 = 76,0,0,0 %;
;  2618  0     literal FSCB$S_NODE2 = 8;
;  2619  0     macro FSCB$Q_NODE3 = 84,0,0,0 %;
;  2620  0     literal FSCB$S_NODE3 = 8;
;  2621  0     macro FSCB$Q_NODE4 = 92,0,0,0 %;
;  2622  0     literal FSCB$S_NODE4 = 8;
;  2623  0     macro FSCB$Q_NODE5 = 100,0,0,0 %;
;  2624  0     literal FSCB$S_NODE5 = 8;
;  2625  0     macro FSCB$Q_NODE6 = 108,0,0,0 %;
;  2626  0     literal FSCB$S_NODE6 = 8;
;  2627  0     macro FSCB$Q_NODE7 = 116,0,0,0 %;
;  2628  0     literal FSCB$S_NODE7 = 8;
;  2629  0     macro FSCB$Q_NODE8 = 124,0,0,0 %;
;  2630  0     literal FSCB$S_NODE8 = 8;
;  2631  0     macro FSCB$Q_ROOT1 = 132,0,0,0 %;
;  2632  0     literal FSCB$S_ROOT1 = 8;                   !  the ROOTn descriptors must be contiguous
;  2633  0     macro FSCB$Q_ROOT2 = 140,0,0,0 %;
;  2634  0     literal FSCB$S_ROOT2 = 8;
;  2635  0     macro FSCB$Q_ROOT3 = 148,0,0,0 %;
;  2636  0     literal FSCB$S_ROOT3 = 8;
;  2637  0     macro FSCB$Q_ROOT4 = 156,0,0,0 %;
;  2638  0     literal FSCB$S_ROOT4 = 8;
;  2639  0     macro FSCB$Q_ROOT5 = 164,0,0,0 %;
;  2640  0     literal FSCB$S_ROOT5 = 8;
;  2641  0     macro FSCB$Q_ROOT6 = 172,0,0,0 %;
;  2642  0     literal FSCB$S_ROOT6 = 8;
;  2643  0     macro FSCB$Q_ROOT7 = 180,0,0,0 %;
;  2644  0     literal FSCB$S_ROOT7 = 8;
;  2645  0     macro FSCB$Q_ROOT8 = 188,0,0,0 %;
;  2646  0     literal FSCB$S_ROOT8 = 8;
;  2647  0     macro FSCB$Q_DIRECTORY1 = 196,0,0,0 %;
;  2648  0     literal FSCB$S_DIRECTORY1 = 8;              !  the DIRECTORYn descriptors must be contiguous
;  2649  0     macro FSCB$Q_DIRECTORY2 = 204,0,0,0 %;
;  2650  0     literal FSCB$S_DIRECTORY2 = 8;
;  2651  0     macro FSCB$Q_DIRECTORY3 = 212,0,0,0 %;
;  2652  0     literal FSCB$S_DIRECTORY3 = 8;
;  2653  0     macro FSCB$Q_DIRECTORY4 = 220,0,0,0 %;
;  2654  0     literal FSCB$S_DIRECTORY4 = 8;
;  2655  0     macro FSCB$Q_DIRECTORY5 = 228,0,0,0 %;
;  2656  0     literal FSCB$S_DIRECTORY5 = 8;
;  2657  0     macro FSCB$Q_DIRECTORY6 = 236,0,0,0 %;
;  2658  0     literal FSCB$S_DIRECTORY6 = 8;
;  2659  0     macro FSCB$Q_DIRECTORY7 = 244,0,0,0 %;
;  2660  0     literal FSCB$S_DIRECTORY7 = 8;
;  2661  0     macro FSCB$Q_DIRECTORY8 = 252,0,0,0 %;
;  2662  0     literal FSCB$S_DIRECTORY8 = 8;
```

```
;    2663  0
;    2664  0      !*** MODULE $SWBDEF ***
;    2665  0      !
;    2666  0      !  Directory string work buffer for wild card directory processing
;    2667  0      !
;    2668  0      literal SWB$M_ELLIPSIS = 1;
;    2669  0      literal SWB$M_BOUNDED = 2;
;    2670  0      literal SWB$M_WILD = 4;
;    2671  0      literal SWB$M_DELIMITER = 8;
;    2672  0      literal SWB$M_TRAVERSE = 16;
;    2673  0      literal SWB$M_FIRST = 32;
;    2674  0      literal SWB$M_ELLIPSIS_EXISTS = 64;
;    2675  0      literal SWB$M_VALID_DID = 128;
;    2676  0      literal SWB$C_BID = 42;                     !  ID
;    2677  0      literal SWB$K_BLN = 328;
;    2678  0      literal SWB$C_BLN = 328;
;    2679  0      !    wild dir spec
;    2680  0      literal SWB$S_SWBDEF = 328;
;    2681  0      macro SWB$B_FLAGS = 0,0,8,0 %;              !  flags (must be first)
;    2682  0      macro SWB$V_ELLIPSIS = 0,0,1,0 %;           !  ellipsis
;    2683  0      macro SWB$V_BOUNDED = 0,1,1,0 %;            !  ellipsis bounded
;    2684  0      macro SWB$V_WILD = 0,2,1,0 %;               !  wild name
;    2685  0      macro SWB$V_DELIMITER = 0,3,1,0 %;          !  following delimiter
;    2686  0      macro SWB$V_TRAVERSE = 0,4,1,0 %;           !  should skip subtree
;    2687  0      macro SWB$V_FIRST = 0,5,1,0 %;              !  first time through
;    2688  0      macro SWB$V_ELLIPSIS_EXISTS = 0,6,1,0 %;    !  dir spec contains ...
;    2689  0      macro SWB$V_VALID_DID = 0,7,1,0 %;          !  FIB DID is valid
;    2690  0      macro SWB$B_PATLEN = 1,0,8,0 %;             !  length of current token
;    2691  0      macro SWB$B_PPOS = 2,0,8,0 %;               !  position in pattern
;    2692  0      macro SWB$B_TOKENS_LEFT = 3,0,8,0 %;        !  number of non ... tokens left
;    2693  0      macro SWB$B_MINIMUM = 4,0,8,0 %;            !  minimum level for success
;    2694  0      macro SWB$B_MAXIMUM = 5,0,8,0 %;            !  maximum level for success
;    2695  0      macro SWB$B_FIRST_E = 6,0,8,0 %;            !  token ! of first ellipsis
;    2696  0      macro SWB$B_DIRWCFLGS = 7,0,8,0 %;          !  FWA$B_DIRWCFLGS on entry
;    2697  0      macro SWB$B_BID = 8,0,8,0 %;                !  block ID
;    2698  0      macro SWB$B_BLN = 9,0,8,0 %;                !  length
;    2699  0      macro SWB$Q_PATTERN = 12,0,0,0 %;
;    2700  0      literal SWB$S_PATTERN = 8;                  !  descriptor of pattern
;    2701  0      macro SWB$L_SCRATCH_PAT = 20,0,32,0 %;      !  scratch copy of first longword
;    2702  0      macro SWB$T_SCRATCH_BUF = 24,0,0,0 %;
;    2703  0      literal SWB$S_SCRATCH_BUF = 48;             !  scratch temp buffer (same size as FWA$T_WILD)
;    2704  0      macro SWB$T_PATTERN_BUF = 72,0,0,0 %;
;    2705  0      literal SWB$S_PATTERN_BUF = 256;            !  should be: FWA$C_MAXDIRLEN-2,
;    2706  0      !
;    2707  0      !****************************************************************************
;    2708  0      !*                                                                          *
;    2709  0      !*  Copyright (c) 1982, 1983                                                *
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;  2725  0      ! *                                                                         *
;  2726  0      ! ***************************************************************************
;  2727  0      ! ***************************************************************************************************************
;  2728  0      !  Created 15-SEP-1984 22:54:43  by  VAX-11 SDL V2.0       Source: 15-SEP-1984 22:49:34 _$255$DUA28:[RMS.SRC]RMSSHR.
;  2729  0      ! ***************************************************************************************************************
;  2730  0
;  2731  0
;  2732  0      !*** MODULE $SFSBDEF ***
;  2733  0      literal SFSB$C_BID = 16;                ! sfsb code
;  2734  0      literal SFSB$C_FIX_LEN = 10;            ! 10 bytes of fixed size data
;  2735  0      literal SFSB$K_BLN = 68;                ! length of sfsb
;  2736  0      literal SFSB$C_BLN = 68;                ! length of sfsb
;  2737  0      !
;  2738  0      !         keep the next two fields in same order as they are in FAB
;  2739  0      !
;  2740  0      literal SFSB$S_SFSBDEF = 68;
;  2741  0      macro SFSB$Q_FILENAME = 0,0,0,0 %;
;  2742  0      literal SFSB$S_FILENAME = 8;             ! descriptor of shared file resource name.
;  2743  0      !   resource name is NODE, DEVICE, FILE_ID
;  2744  0      !   points to RESNAM, below
;  2745  0      macro SFSB$W_NAME_LEN = 0,0,16,0 %;     ! subfield to address descriptor length field
;  2746  0      macro SFSB$L_ADDRESS = 4,0,32,0 %;      ! subfield to address descriptor address field
;  2747  0      macro SFSB$B_BID = 8,0,8,0 %;           ! block id
;  2748  0      macro SFSB$B_BLN = 9,0,8,0 %;           ! block length in longwords
;  2749  0      macro SFSB$B_CURMODE = 10,0,8,0 %;      ! Mode of the current lock
;  2750  0      macro SFSB$B_PREMODE = 11,0,8,0 %;      ! Mode of the previous lock
;  2751  0      macro SFSB$T_RESNAM = 12,0,0,0 %;
;  2752  0      literal SFSB$S_RESNAM = 32;              ! 32 bytes for name of shared resource
;  2753  0      macro SFSB$L_FAC_CODE = 12,0,32,0 %;    ! RMS facility code (RMS$)
;  2754  0      macro SFSB$W_FID_NUM = 16,0,16,0 %;     ! file id word one
;  2755  0      macro SFSB$W_FID_SEQ = 18,0,16,0 %;     ! file id word two
;  2756  0      macro SFSB$W_FID_RVN = 20,0,16,0 %;     ! file id word three
;  2757  0      macro SFSB$T_DEV_NAM = 22,0,0,0 %;
;  2758  0      literal SFSB$S_DEV_NAM = 22;             ! 22 bytes remain to hold device id (node$device_name)
;  2759  0      macro SFSB$L_LKSB = 44,0,32,0 %;        ! lock status block
;  2760  0      macro SFSB$W_STATUS = 44,0,16,0 %;      ! VMS status code
;  2761  0      macro SFSB$W_S_BITS = 46,0,16,0 %;      ! various status bits
;  2762  0      macro SFSB$L_LOCK_ID = 48,0,32,0 %;     ! second longword of LKSB is the lock id
;  2763  0      macro SFSB$L_LVB = 52,0,0,0 %;
;  2764  0      literal SFSB$S_LVB = 16;                 ! lock value block
;  2765  0      macro SFSB$B_FAC = 52,0,8,0 %;          ! fac bits from FAB
;  2766  0      macro SFSB$B_SHR = 53,0,8,0 %;          ! sharing bits (from FAB SHR field)
;  2767  0      macro SFSB$L_HBK = 60,0,32,0 %;         ! high block
;  2768  0      macro SFSB$L_EBK = 64,0,32,0 %;         ! end of file
;  2769  0
;  2770  0      !*** MODULE $GBSBDEF ***
;  2771  0      !
;  2772  0      !         GBSB field definitions - global buffer synchronization block
;  2773  0      !
;  2774  0      !         The GBSB contains the information necessary to determine if a
;  2775  0      !         global section is already open for a file on a given node, and
;  2776  0      !         is used for synchronizing access to the global section.
```

```
;    2777  0      !
;    2778  0      !                    +-----------------------------------------+
;    2779  0      ! gbsb:              |              FILE_NAME                  |
;    2780  0      !                    |                                         |
;    2781  0      !                    |-------+---------+---------+-----------|
;    2782  0      !                    | FLAGS | CURMODE |   BLN   |   BID     |
;    2783  0      !                    +-------+---------+---------+-----------+
;    2784  0      !                      |                                       |
;    2785  0      !                      |            Resource Name              |
;    2786  0      !                      |                                       |
;    2787  0      !                      +-------------------+-------------------+
;    2788  0      ! lksb:              | Still to be def-  |  VMS status code  |
;    2789  0      !                    | ined status bits  |                   |
;    2790  0      !                    +-------------------+-------------------+
;    2791  0      !                    |  Lock Id. (Returned for new locks,    |
;    2792  0      !                    |              input for conversions)   |
;    2793  0      !                    +-------------------+-------------------+
;    2794  0      ! lkvb:              |       GBC         |      GBREF        |
;    2795  0      !                    +-------------------+-------------------+
;    2796  0      !                    |      GBS - size of GS in bytes        |
;    2797  0      !                    +---------------------------------------+
;    2798  0      !                    |                spare                  |
;    2799  0      !                    +---------------------------------------+
;    2800  0      !                    |                spare                  |
;    2801  0      !                    +---------------------------------------+
;    2802  0      !
;    2803  0      !
;    2804  0      literal GBSB$C_BID = 9;                    !  gbsb code
;    2805  0      literal GBSB$M_NOTACCESSED = 1;
;    2806  0      literal GBSB$K_BLN = 68;                   !  length of gbsb
;    2807  0      literal GBSB$C_BLN = 68;                   !  length of gbsb
;    2808  0      literal GBSB$S_GBSBDEF = 68;
;    2809  0      macro GBSB$Q_FILENAME = 0,0,0,0 %;
;    2810  0      literal GBSB$S_FILENAME = 8;               !  descriptor of shared file resource name.
;    2811  0      !   resource name is NODE, DEVICE, FILE_ID
;    2812  0      !   points to RESNAM, below
;    2813  0      macro GBSB$W_NAME_LEN = 0,0,16,0 %;        !  subfield to address descriptor length field
;    2814  0      macro GBSB$L_ADDRESS = 4,0,32,0 %;         !  subfield to address descriptor address field
;    2815  0      macro GBSB$B_BID = 8,0,8,0 %;              !  block id
;    2816  0      macro GBSB$B_BLN = 9,0,8,0 %;              !  block length in longwords
;    2817  0      macro GBSB$B_CURMODE = 10,0,8,0 %;         !  Mode of the current lock
;    2818  0      macro GBSB$B_FLAGS = 11,0,8,0 %;           !  spare
;    2819  0      macro GBSB$V_NOTACCESSED = 11,0,1,0 %;     !  Process has already decremeted access count for GBS.
;    2820  0      macro GBSB$T_RESNAM = 12,0,0,0 %;
;    2821  0      literal GBSB$S_RESNAM = 32;                !  32 bytes for name of shared resource
;    2822  0      macro GBSB$L_LKSB = 44,0,32,0 %;           !  lock status block
;    2823  0      macro GBSB$W_STATUS = 44,0,16,0 %;         !  VMS status code
;    2824  0      macro GBSB$W_S_BITS = 46,0,16,0 %;         !  various status bits
;    2825  0      macro GBSB$L_LOCK_ID = 48,0,32,0 %;        !  second longword of LKSB is the lock id
;    2826  0      macro GBSB$W_GBC = 52,0,16,0 %;            !  Number of global buffers in section.
;    2827  0      macro GBSB$W_GBREF = 54,0,16,0 %;          !  Number of accessors to global section.
;    2828  0      macro GBSB$L_GS_SIZE = 56,0,32,0 %;        !  Size of global section in bytes.
;    2829  0      !
;    2830  0      ! Version:      'V04-000'
;    2831  0      !
;    2832  0      !****************************************************************************
;    2833  0      !*                                                                          *
```

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;    2851  0      !*                                                                           *
;    2852  0      !*                                                                           *
;    2853  0      !*****************************************************************************
;    2854  0
;    2855  0      !++
;    2856  0      ! UTLDEF_UNDECLARE.R32 - undeclare macros defined in UTLDEF.R32.
;    2857  0      !--
;    2858  0
;    2859  0      UNDECLARE %QUOTE $BYTEOFFSET;
;    2860  0      UNDECLARE %QUOTE $BITPOSITION;
;    2861  0      UNDECLARE %QUOTE $FIELDWIDTH;
;    2862  0      UNDECLARE %QUOTE $EXTENSION;
;    2863  0      UNDECLARE %QUOTE $FIELDMASK;
;    2864  0      UNDECLARE %QUOTE $EQULST;
;    2865  0      UNDECLARE %QUOTE GET2ND_;
;    2866  0      UNDECLARE %QUOTE NUL2ND_;
;    2867  0      UNDECLARE %QUOTE GET1ST_;



;                                        COMMAND QUALIFIERS

;       BLISS/LIB=LIB$:RMSINTDEF/LIS=LIS$:RMSINTDEF.LST LIB$:RMSINTDEF

; Run Time:          00:17.4
; Elapsed Time:      00:19.9
; Lines/CPU Min:      9908
; Lexemes/CPU-Min: 62899
; Memory Used:  292 pages
; Library Precompilation Complete
```

RMSCALLS
MAR

RMSIDXLNK
R32

RMS
LST

RMS32MAC
MAR

RMSMSGMAC
MAR

UTLDEF
R32

RMSIDXMAC
R32

UTLDEFUND
R32

RMSINTDEF
LST

RMSIDXDEF
R32

NTAMACROS
MAR

NT0ACCESS
LIS

NT0CLOSE
LIS

NT0BLDXAB
LIS

NT0CONN
LIS

NT0CREATE
LIS

NT0DAPIO
LIS

NT0DAPCRC
LIS

NT0ACCFIL
LIS

NT0BLKIO
LIS